Vol. XLIII MAY 15, 1915 No. 10

Gleanings in Bee Culture

A City Apiary in Pennsylvania

Gleanings in Bee Culture

Published by The A. I. Root Co., Medina, Ohio

A. I. Root, Editor Home Department — J. T. Calvert, Business Manager
H. H. Root, Managing Editor — E. R. Root, Editor — A. L. Boyden, Advertising Manager

Entered at the Postoffice, Medina, Ohio, as second-class matter

VOL. XLIII. MAY 15, 1915 NO. 10

EDITORIALS

Various Methods of Wintering in Idaho

We hope to show next fall the methods used by J. J. Anderson, of Salem, Idaho, in wintering his bees in eastern Idaho. He is one of the best beekeepers in the valley, and there are many of them there. In this connection it is fair to say that this territory is already well stocked with bees.

Our Cover Picture

When the total number of apiaries in cities is considered, the proportion of complaints because of the bees is seen to be very small. If the beekeeper is careful where he locates the bees, and if he handles them intelligently, there is really no reason for their becoming a nuisance at any time. A good deal depends upon where the hives are placed. If there is an alley or passageway directly in the line of flight the bees at certain times of the year are sure to make trouble.

The picture on our cover for this issue shows a well-placed city apiary belonging to Chas. Y. Hake, of York, Pa.

How Bees Have Wintered

Late reports show that bees have wintered unusually well, taking the country as a whole; but there were quite severe losses in Pennsylvania, New York, northern Ohio, southern Michigan, and a 10 to 25 per cent loss in and about Denver, Colo. There seems to have been some unfavorable weather or fall flora, or something in the regions mentioned, that caused a loss of anywhere from 10 to 50 per cent of the bees. The losses seem to have been heaviest in parts of Pennsylvania and New York, ranging anywhere from 25 to 50 per cent. Most of the reports from Michigan are unusually good, and the prospects for clover in both Michigan and Wisconsin are excellent.

In some of the southern states the bees have not built up quite as well as usual.

Wintering Outdoors in Single-walled Hives

A few days ago we looked over a couple of apiaries some fifteen miles east of Medina. The bees were in single-walled hives, exposed to the north and west; and yet, remarkable to relate, they wintered in good condition. Fortunately there was no aster nor other fall sources of honey in the vicinity. The hives were filled with the best grades of honey. One owner said he had not touched the brood-nests for over a year. He just let them alone. He had taken no honey from them, because he said he thought they would need all they had. He was wise.

The other man had taken quite a little crop of honey, but left enough in the hives, for he likewise had not disturbed their brood-nests. The colonies were strong when they went into winter quarters; and the fact that they had not been tampered with was probably one strong reason why they wintered so well.

A few colonies in double-walled hives, however, showed up stronger than those in the single-walled. This only goes to prove that with good stores, young queens, and strong colonies, bees will winter sometimes in spite of wind exposure and only a single thickness of wood between them and the weather. That they will do better in double-walled hives was also proven.

Is a Pair of Frame-tongs a Necessary Tool for a Foul-brood Inspector? Some of the Troubles of a Bee Inspector

One of our state inspectors, Mr. A. C. Ames, of Peninsula, Ohio, is using frame-tongs for pulling frames out of hives. While this tool is not particularly needed in modern apiaries, it is almost a necessity among the old-fashioned or farmer beekeepers who do not disturb their brood-nests from one year's end to the other. Frames are often badly spaced, too far apart or too close together, or, even when properly spaced, so tightly glued down that it is

difficult to remove them, even when a good tool or pry is used to break the propolis connections. Poor spacing results in comb attachments so that it is impossible for the ordinary pair of hands to get a good grip on a frame of comb. It is then that a pair of frame-tongs with double jaws comes in very handy.

We have heretofore not thought much of such a tool, but we are beginning to believe that supply manufacturers ought to furnish something of this kind for the use of inspectors.

On some jobs they should have a hatchet, chisel, crowbar, frame-tongs, bee-gloves, bee-veil, clothes more than sting thick, and the patience of Job. We have gone with foul-brood inspectors on various occasions, and we know of the exasperations that one meets in trying to go through some hives of bees. Home-made hives and home-made frames, neither of which fit the other, make a combination which, if they have not been tampered with for three or four years, will exasperate even an angel. An old box hive or a log gum could not be worse.

The New Queen-cage Candy; How to Make it

So far the tests are proving satisfactory with the queen-cage candy made of invert sugar and ordinary commercial powdered sugar. The brand of the former that we have been using is called nulomoline, made by the Nulomoline Co., 111 Wall St., New York. This product is used in exactly the same way as honey. As there may be some who are not familiar with how to make Good or Scholz candy we will give our method.

The invert sugar, or nulomoline (or honey of best quality) is heated to a temperature of about 140 degrees Fahrenheit. This is not to sterilize it, but to make it mix better with the powdered sugar. The latter is poured into the hot syrup little by little, and stirred until the mixture cannot be stirred any more. It is then placed on a board which is covered over with powdered sugar, and handled like bread dough and flour. More sugar is kneaded in until a stiff dough is formed.

The success or failure in making this candy all depends on whether *just the right amount of sugar* is added to the honey or invert sugar syrup. If too much is put in, the dough will be too stiff and hard, and the bees will starve on it; if not enough, it will "run," daub, and kill the bees. We make our candy so that it will hold its shape and position when the temperature of the candy and of the atmosphere around it is 90. This is about as hot as summer weather ordinarily becomes; and unless the candy will stand that temperature it will flatten out and "run" in very warm weather.

Of course invert sugar or nulomoline cannot transmit foul brood; and if it can take the place of honey, other things being equal, it is greatly to be preferred. So far the new candy remains moist longer, and has a better flavor than that made with honey boiled for 20 minutes to sterilize it. This long boiling we believe is what killed so many bees and queens in the mails of last year.

Honey-crop Conditions; Clover Prospects and Prices

During the last few days, according to the Weather Bureau maps to which reference was made on page 349 of our last issue, there have been general rains over the greater part of the United States. All reports show that the prospects are good from what white clover there is in sight. In some localities it is reported that there is only about one-half the amount of clover that there has been in former years; and even if all other conditions are favorable there will be only half a crop. In other localities there seems to be the usual amount of clover. The drouth of last fall, and the winter-killing of last winter in some places, have been responsible for the reduction in the clover regions.

There have been general rains in Texas, and the prospects are good for a crop from that section of the country. The early rains in California gave mountain sage a good start, and the prospects were excellent. A partial drouth followed, but this was quickly dispelled by frequent rains that began on April 23d. These have continued with more or less frequency ever since. These rains, according to those same Government maps, have been general over all California. There will be a light crop of orange-honey, and a fair crop of mountain sage. Had it not been for an intervening drouth and the hot winds in southern California the crop of mountain sage would probably have been record-breaking.

Professor Baldwin reports a good yield from orange at Deland, Fla. Whether others in his state are as fortunate as he we have not yet learned.

In Colorado and some of the other mountain states it has been reported that the mountains contain less snow than usual. This may curtail somewhat the yield from alfalfa. There will be the usual good yield of alfalfa in the Imperial Valley.

To recapitulate: There will be from one-half to two-thirds of a crop of clover; slightly under an average of best grades of alfalfa; from one-half to a fair yield of orange in California; from one-half to two-thirds of a crop from mountain sage; full crop in Texas.

Practically all the comb honey of the better grades is cleaned up. There should be a strong demand for new No. 1 fancy comb honey.

The price of extracted will probably rule about the same as last year. But in order to get this, more comb honey should be produced this year than last or extracted will slump in price. The heavy sale of sections warrants the belief that there will be more produced.

Later.—Just as we go to press our manager at Los Angeles writes as follows:

Southern California in general has had a series of light rains coming one on top of another. This should greatly increase the chances for a good sage flow, while it has undoubtedly injured the possible output of orange honey inasmuch as the oranges have been in full bloom during the period of these rains, and consequently the flow has been shortened by just so many days of rains, clouds, and cold. This will much more than be made up by the benefit to the sage.

Bees Necessary in Southern Grape Culture

FACTS of pollination are of the utmost importance in fruit-growing. Every horticulturist knows that some classes of fruit will yield lightly, if at all, when far from other varieties, and that, for best results, not only should varieties be selected that pollinate well together, but some provision should be made for the transference of the pollen. The wind cannot be relied upon for this work.

The Muscadine grapes, according to the North Carolina Experiment Station, are self-sterile—that is, the vines which produce fruit must be fertilized by pollen from other vines. The only vines capable of doing this bear no fruit. So it is necessary to plant both the male and female vines close together, and thus insure that the pollen be carried from one vine to the other.

Unfortunately bees are not nearly so active on the blossoms of the Muscadine grape as they are on other plants. The small proportion of flowers which develop into fruit can probably be traced to this fact. Says Bulletin 209, "Every effort should be made to encourage bees. It is very evident from our results that at least one hive of bees should be kept where any large number of vines are grown."

The Muscadine grape is more important in the South than any other. In North Carolina it is estimated that more Muscadine grapes are grown than all others combined. They flourish from Delaware south to Florida, and west as far as Texas. Points of superiority over other grapes lie in their resistance to insect pests and fungous diseases, their ability to grow in poor dry sandy soil, and their immunity from frosts, due to their tardy blooming period.

Oregonian Beekeeping

"Beekeeping for the Oregon Farmer," by H. F. Wilson, Entomologist Oregon Experiment Station, Bulletin No. 168, Oregon Agricultural College.

The bulletin opens, following the introduction, with a short history of bee culture in Oregon. The author believes that bees were first imported the year after the discovery of gold in California, and that they were brought along during the great rush for the Coast. A considerable amount of gold must have been discovered in the bee business, for the first colonies sold for $125 a colony. Following this early importation not many more bees were brought in, the rest developing largely from those imported by the early settlers.

The early portion of the report is a survey of the present situation of apiculture in Oregon—practically the same matter which Mr. Wilson prepared for GLEANINGS, page 895, December 15, 1913. Most of the honey comes from central Oregon, while the Columbia Basin is second, and southern Oregon third. On the average, one out of four farmers keeps bees. A distribution map has been prepared showing the approximate number of 50,000 colonies. These are worth, roughly, $250,000.

"For the actual amount of money invested there are few agricultural pursuits that will give returns as great as those that can be made by beekeeping," encouragingly asserts the writer; but he is careful to add that, "like every other agricultural industry profits in beekeeping are secured by hard work and careful attention to business."

The rest of the bulletin is given over to a discussion of the bee business in its manifold phases. His remarks under the head "Why and When Beekeeping does Not Pay" are valuable in accounting for many of the failures. Varieties of bees, necessaries of equipment, types of hives, manipulation, and general management to avoid or overcome the obstacles which sooner or later confront every beekeeper, are all dis-

cussed in such a manner that the pamphlet is made a short text-book, valuable not only to the Oregon novice but to any one else taking a hand in the game.

Bees and Fruit-bloom in and about Medina

Our readers will remember that fifty-acre apple-orchard some ten miles north of Medina, and how that the proprietors of that orchard have desired to have a large number of bees in it. It will also be recalled that the first year the present management took charge of this orchard they secured, with the help of the bees, and by spraying and trimming, 16,000 bushels of apples. The following season was not as favorable, but they took another big crop, but not as large as that of the previous year. This year we again put some fifty colonies in the orchard; and yesterday, May 6, we drove down there to see how the bees were working on the blossoms. The trees had not all come into bloom; but some where the blossoms matured had plenty of bees on them. In fact, there was a distinct roar such as one hears near basswood-trees. A glance upward showed hundreds and hundreds of bees; and it also showed something else. Some little flies, or bees, or what looked like bees, hovered in the air. These latter would occasionally alight on the center of a blossom; but they were by no means as persistent and active as the honeybees. They would hang and poise on the wing like a hummingbird, then dart like a bullet in one direction or the other. Sometimes they would alight on the green leaves, and at other times on the petals of the flowers. Sometimes we caught them in the act of helping themselves to pollen; but they made no effort, so far as we could discover, to get at the nectar at the base of the blossom.

We were so much interested that we made another trip, taking our head queen-breeder, Mr. Mell Pritchard, who is also the "bug man" of the A. I. Root Co. Some of the bees which he saw he pronounced the solitary sand bees, a very small black bee with a head like that of a common honeybee, but very different in its general appearance. Some call them sweat bees. There was still another kind of bee or fly that was more numerous than the last named. They were smaller than honeybees, and looked very much like small yellowjackets. They had yellow bands, and the ones which we captured showed that they had pollen on their legs and on their bodies. While they were very numerous in the orchard, and no doubt were doing something in the way of pollinating blossoms, they were by no means as industrious and persistent as the honeybees. The latter would seem to rush from blossom to blossom in the greatest haste. One bee would pollinate a hundred blossoms while these flies would pollinate only one.

On coming home Mr. Pritchard pulled out his authority (Comstock's book), and identified these bees as the *Diptera;* that is to say, they were not bees but *flies.* The description showed plainly that they were the yellow-banded species belonging to the genus *Syrphus.* They do much good by destroying colonies of aphids. There are other species of this family that resemble bumblebees, and others the honeybee; still others the wasp. One species "so closely resembles a common honeybee," says Prof. Comstock, "as to be often mistaken for it."

In this connection we have wondered whether in that Pejario Valley, California (see Gleanings, p. 305), where there are 15,000 acres of apple-trees, and where it was alleged no bees were needed, there were not present myriads of these flies. In referring this matter to the Entomologist, Professor H. A. Gossard, of the Wooster Experiment Station, Ohio, he gave it as his opinion that there was nothing to prevent these same flies from being present provided there were colonies of aphids for them to feed on. You will remember that the Horticultural Commissioner of Pejario Valley, supported by Professor Woodworth, of the University of California, stated that the apple-trees of that valley did not require the presence of the honey-bees; that the two varieties of apples grown there, the Newtown and the Bellflower, were self-fertile. One of these, the Bellflower, is known to be sterile to its own pollen in the eastern states. We have just been wondering whether or not either of these vaieties does not require the agency of bees or insects. We proved that there are bees in the valley; but it is evident that there were not enough to pollinate such a vast number of trees. Is it not possible that the syrphus flies are doing this work? On the other hand, Professor Gossard explains that there is quite a difference in the formation of the blossom of the same variety of apples in the East and in the West. If this is true it may account for the fact that a variety that is self-fertile in one locality is sterile to its own pollen in another. In the one case the pollen cannot reach the ovaries of the blossom without the help of insects, and in the other no such help is needed. This whole question is an interesting one. If any of our readers can solve the problem we shall be glad to hear from them.

Spraying Trees Just Before the White Petals Fall; Is the Practice Dangerous?

While Mr. Pritchard and ourselves were making observations at the big orchard north of Medina we discovered that the bees would ignore certain of the apple-blossoms, and that those that they did visit showed that the anthers of the stamens had turned slightly brown. This would indicate that the blossoms before yielding nectar must be ripe. Mr. Pritchard also called our attention to the fact that the bees actually visited and stayed longer on the old blossoms where the white petals had entirely fallen off. We thought he must have made a mistake; but after a little scrutiny we found numerous cases where the bees were gathering nectar from the old blossoms without a single white petal on them.

To-day Professor Gossard came down with Mr. Walworth, the bacteriologist, to get some material for another investigation. We drove them over to this orchard. He found, just as we did, that the bees were gathering nectar from these old blossoms from which the petals had fallen. Mr. Walworth then dissected one of these and found considerable nectar, although the blossom was denuded of all bright colors.

This has a practical bearing to those who have bees in the vicinity of orchards. It means that we have been spraying our trees at the wrong time. The usual instructions sent out recommend applying the spray just about as the white petals begin to fall. The supposition has been that at this stage no more nectar is yielded, and hence no bees would be killed; but the observations made by Mr. Pritchard, Prof. Gossard, and Mr. Walworth and ourself, show very clearly that bees gather not a little nectar *after* the petals have fallen. If arsenate of lead is poisonous to bees, which is ordinarily applied at this time in the form of sprays, then the recommendation to apply the poison just before or after the petals fall is *just at a time* when considerable damage will be done. It would seem, then, that our instructions should be modified so that the arsenate-of-lead sprays shall not be applied until several days after the petals are gone.

The year that our neighbors in the fifty-acre apple-orchard secured such an enormous crop of apples was the year when they sprayed just before the petals began to fall; hence they must have sprayed when the blossoms were yielding a large amount of nectar. Whether this spraying killed our bees we could not tell. If so, there were no dead bees or brood showing about the hives.

In view of the facts above stated, and that some do not believe that arsenate-of-lead sprays kill bees, we shall have to say we don't know; and yet we have on file large numbers of reports that look very much as if the bees had been poisoned by the thousands by spraying when in full bloom.

G. W. York, Former Editor of the American Bee Journal, Statesman and Lawmaker

On our recent western trip we had the pleasure of meeting our old friend George W. York, who for many long years was sole owner and proprietor of the *American Bee Journal* as well as its editor, and who, prior to that time, had served in the capacity of assistant editor and manager under Thomas G. Newman for several years. After many years of arduous labor, Mr. York sold out to the well-known business men and beemen, Charles Dadant & Sons, of Hamilton, Ill. Mr. York never claimed to be a practical beekeeper, and never posed as such in his regular editorial columns. He said to us recently that the *American Bee Journal* had improved in one respect; and that was, there are practical beemen at the head of it as publishers and editors, and he noted with great pleasure the apparent life and growth of the journal. After the continuous strain of many years of hard labor, during which Mr. York did the work of two or three men almost every day of his life, he began to feel the need of a change. A business opportunity presented itself, and he sold to his old friends the Dadants, as before explained. He then went to Sand Point, Idaho, going into the fruit and dairy business, where there was entire change of profession, climate, and surroundings away from the turmoil and noise of a big city. One can scarcely blame him for doing this, for sometimes there come periods in one's life when a change in profession, although it sometimes results disastrously in a financial way, is desirable. Mr. York, however, in the parlance of the day, is making good. While as he says he is not getting rich quick, he is making a living, and is happy and well. His picture taken expressly for this journal shows it. He is happy, because he is outdoors right next to Nature. Bees? Yes, he keeps a few.

It was not long before the people of Sand Point, Idaho, began to discover in Mr. York not only a friend and neighbor but a citizen. Much against his protest he was elected a member of the city council; and when he got into that body there was something doing, for Mr. York initiated a movement to clean out the undesirable element of his

town. It was not long before they began to think of him as a fit candidate for Representative from his county. He has been a life-long Prohibitionist; but as there was no organization of the Prohibition party there, the Republicans insisted on his running as a Representative. He protested that he was not a Republican, that he had never had any inclination to get into politics, and he much preferred to stay out of it. But tremendous pressure was brought to bear, with the result that he consented to have his name used, with the understanding that his friends would not expect him to do a single thing toward his own election.

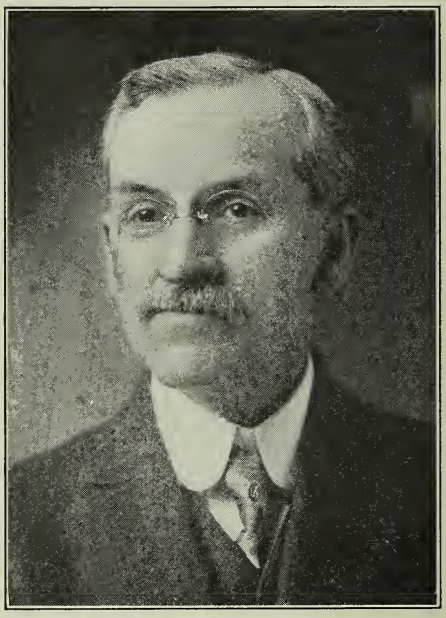
"You leave that to us," they said. It is unnecessary to say that he was overwhelmingly elected.

When he went down to the legislature he was anything but a nonentity. In fact, he soon become one of the leaders in the House. As might well be expected, while he bore the Republican label he was still a Prohibitionist at heart. A temperanec wave was sweeping through Idaho, and many members of the General Assembly were elected on that issue. Mr. York was not afraid to show his colors, and the result was he was regarded by every one as one of the real leaders among the Republicans and Democrats of the House. So far as we can ascertain, he was the real leader in temperance matters, but this he denies.

Both the House and Senate were overwhelmingly temperance; but a few of the minority in the upper house attempted to filibuster. The House passed one temperance bill unanimously. Mr. York and his colleagues finally told the bunch that the House would not pass a single bill of any kind until they passed the temperance bill. The wet Senators concluded that it was a mere bluff. Things went on in this way for a couple of weeks without the House passing a single Senate bill. Finally when they saw that the members of the House meant what they said, they passed the bill, and shortly after passed other temperance bills that will make Idaho in 1916 the dryest of all dry states in the Union. A great deal of credit, no doubt, belonged to our old friend York for this.

Some of his colleagues told us that he was tactful, courteous, and had a way about him that would melt all opposition. When it was necessary to fight to the last ditch, Mr. York would be found in the fore front. He disclaims any credit for what he did for the temperance and other measures.

We have before said in these columns he was the father of one of the most drastic foul-brood bills that was ever put before a legislature. It passed the House and Senate by a large majority; but the reform governor, not properly understanding it, vetoed it. For particulars see page 258. It was certainly no fault of Mr. York that the bill did not become a law. He and his friends interviewed the Governor, and explained the thing in all its details; but apparently His Excellency did not understand, and vetoed it on the ground that it provided for too many inspectors, not noticing that the law was properly safeguarded on this point, by a limit on the general appropriation—$5000—a modest sum in this day and age. Other states have used as high as



GEORGE W. YORK

$10,000, and some have gone as high as $30,000.

We saw Mr. York busily at work in the House before he knew we were in town. He seemed to be one of those legislators who are always on the job.

This legislature of which our friend was a member presented a remarkable contrast to what the former one had been; and the fact that there was one man, or several of them, who believed in churches and Sunday-schools, in this General Assembly, provoked no little comment. Mr. York was in general demand to speak before churches and Sunday-schools, and it seemed almost a novelty for a Representative to stand up in the pulpit and talk about God.

Dr. C. C. Miller

STRAY STRAWS

Marengo, Ill.

REPLYING to J. A. Heberle, p. 379, I think heather is not to be found in this country. A patch was once started, in New Jersey, I think, but did not succeed. As he says, heather honey is not considered first-class in Germany, but, somewhat curiously, in Scotland it is counted the finest in the world.

ALL the while I'm learning more and more that rules good for me may not be good for others. One of the things that I think I know for certain is that it is not advisable for me to supersede any queen merely on account of her age. Now comes P. C. Chadwick, p. 353, and says he lost 10 per cent of his two-year-old queens in winter and spring, and not one of his one-year-olds. If I had his locality, or his bees—I wonder which it is—I'd suffer no two-year-olds except a few extra good ones.

GLAD to see that good word about Editor Bixby, p. 304; but why didn't you tell us about his wife? I suspect she's the better man of the two. [If she is not the "better man" she is certainly his equal. She knows how to make muffins to go with honey that are superior to any thing we have ever tasted anywhere. If they could be sold at either of the great expositions on the Pacific Coast, with honey and butter on them, they would draw crowds—yes, a regular stampede of people. She is just as much interested in bee problems as any beeman we ever met. It is not often that we find a woman so enthusiastic about her husband's business. She did and could keep up with two bee editors, and that is going some.—ED.]

IONA FOWLS, I'd give a pretty penny for a talk with you. You say, p. 377, that Mr. Alexander "took bees that had not begun swarming." Yes, but he also took bees that had started cells, for he especially directs to look the hive over to see if it contains cells, and "If it does, destroy them." (See A B C and X Y Z, p. 365.) In GLEANINGS for Aug. 15, 1911, p. 490, to which you refer, I replied, to a question, that brood over an empty super would not start swarming below; but I didn't say, and I didn't think, that swarming would be started if there was nothing but an excluder between the queen and the brood above. In fact, that's the very thing I've done many a time, after cells were started, and even after swarming, and I don't remember that I ever did it before cells were started. And I count it a sure cure for swarming.

J. L. PEABODY, the 83-year-old who appears on page 343, is the man who invented the first honey-extractor I ever used or saw. He's the man of whom beekeepers may feel proud. [One of the privileges we had at the National convention held at Denver was to see and hear Mr. Peabody. The president invited him to the platform to address the meeting. Notwithstanding his early connection with the honey-extractor, he was very modest in saying that not he but his brother should be given the credit for building that early machine. He was generous to say, however, that A. I. Root built a better machine because it was geared up. He then went on to tell his early experiences, all of which was interesting, because we were listening to a man who was one of the early pioneers, and whose name has been linked with those of Langstroth, Quinby, Wagner, Gallup, Tupper, and others of those early days; and while we are about it we might as well link our own Dr. Miller with the group.—ED.]

YOU'RE trying, Mr. Editor, p. 347, to find why aster stores act differently in different localities; and while you're at that you may as well tell at the same time why your bees work on aster and mine don't. Asters and goldenrods a-plenty here, but seldom a bee on them. [Can't answer that question; but next fall we hope asters will not yield in our locality. If the aster honey should all be used up in brood-rearing it would do no harm; but asters yield such an infinitesimally small quantity that the poor bee that is out in the field after it must go miles and miles and miles through swamp brush tearing its wings before it can get a load. In our opinion bees will wear themselves out in working on aster—more so than on any other honey-plant. One apiary that we had near the Akron swamp was in fine condition by the first of September. By the first of October those same colonies dwindled down to half their former strength. It looked as if half of them had been poisoned. The real fact is, that the aster bees had worn themselves out by long flights, and died a natural death. This left the colonies about half strength, with bad stores for winter. Fearing that these stores might kill them we moved most of the aster bees to Virginia, where they could have a flight every few days.—ED.]

J. E. Crane

SIFTINGS

Middlebury, Vt.

"Setting bees out of the cellar," by E. S. Miles, p. 222, March 15, is full of good advice, and well worth the careful attention of inexperienced beekeepers.

* * *

Mr. Doolittle, page 224, March 15, discusses record-boards in his usual common-sense way, and I, for one, agree with him that there is nothing better than a smooth board.

* * *

Mr. L. H. T. Stone, of Cambridge, Mass., wants to know what I meant by single hives well packed, Jan. 15. Well, I meant just one colony in a case instead of four as Mr. Holtermann packs them.

* * *

Dr. Miller says, page 177, March 1, "I may say that my bees in the cellar are never entirely quiet. There is always at least a gentle murmur, something like a soft breeze through pine-trees." Thank you—just what I wanted to know; just as good as going into your cellar myself. Mine is the same.

* * *

I received this week a sample of scarified sweet-clover seed from C. P. Dadant. A lot of it that I placed between damp paper, less than two days ago, has already nearly all sprouted. I believe this treatment of the seed is going to prove a great help in introducing this clover and getting farmers to sow it. Of 72 tests made by the Department of Agriculture an average of only 36 per cent germinated.

* * *

Hawkweed, or paintbrush, as it is often called, is one of the farmer's worst pests here in Vermont, and it is getting to be quite common. It spreads by underground roots as well as by seeds. The seeds are winged like the dandelions, and the wind carries them everywhere. It seems to thrive on all sorts of soils. I have worried for fear it would ruin our bee pasture when it becomes more abundant, as it surely will. It seems to be utterly worthless, and quickly runs out our native grasses in pasture and meadow. A farmer, however, in a nearby town has discoveerd that sweet clover will clean it out and produce a forage crop of value. One more mark to the credit of sweet clover.

* * *

Mr. Byer, p. 178, calls attention to a statement of Arthur C. Miller in the December number of GLEANINGS that "any lively youngster is supposed to be able to do the trick" of making candy, and enquires how I feel now. Pretty well, thank you. How do you feel? Now, the trouble with me was not in the making, for I made most beautiful blocks of candy as hard as bricks. But the trouble was they wouldn't stay made. I set most of them away in a cool room until I wanted to use them, when they began to soften on the outside and run, and the block would bend, and twist out of shape. What a mess! I suppose I used too large a proportion of honey or corn syrup. Thanks to Mr. George H. Rea, page 150, Feb. 15, one pound of honey to twenty-five of sugar is about right.

* * *

After speaking of "Upward Absorbents vs. Sealed Covers," the editors of GLEANINGS say, page 90, "Strictly speaking we did not use sealed covers, but an arrangement that was a compromise between the two extremes." "This is the arrangement that at Medina has generally given us the best results." Exactly; and I believe this will give best results in most places. All that is needed in upward ventilation is to get rid of the moisture and no more. Old cloths coated with propolis, a board or two pieces of boards laid on loosely, or even a glass with a slight crack around the edges, answers every purpose. It doesn't take a great deal to let it escape. We do not think alike, often, because we do not understand each other.

* * *

Langstroth wrote more than sixty years ago, "I come now to mention a substitute for liquid honey, the value of which has been extensively and thoroughly tested in Germany, which I have used to great advantage. It was not discovered by Dzierzon, although he speaks of its excellence in the most decided terms. The article to which I refer is plain sugar candy, or, as it is often called, barley candy. It has been ascertained that about four pounds of this will sustain a colony during the winter when they have scarcely any honey in the hive. If it is placed where they can get access to it without being chilled they will cluster upon it and gradually eat it up. It not only goes further than double the quantity of liquid honey, but is found to agree with the bees perfectly; while the liquid honey is almost sure to sour in the unsealed cells, and expose them to dangerous and often fatal attacks of dysentery." Is there anything new under the sun?

BEEKEEPING IN CALIFORNIA

P. C. Chadwick, Redlands, Cal.

Old Dutch Cleanser is excellent for removing propolis from the hands.

* * *

Dr. Miller, page 261, April 1, advises planning ahead to have extra combs of honey to feed bees instead of making candy. No better advice could be given regarding this matter.

* * *

Look at the picture of a ten-dollar honey-house, page 327, April 15, and see if you think it could be built for that price in California. It looks to me as though it would take two carpenters a day to build it, which would figure eight dollars for labor alone.

* * *

Uncle Sam has kindly sent me one of the new cook books for using honey. It has some dainty recipes that I am anxious to have tried.

Later.—I see my wife looking at those recipes, which makes me believe something good is coming.

* * *

Redwood hives should always be nailed with cement-coated nails. When redwood gets wet the water and wood have a tendency to form an acid that eats metal very rapidly. The cement coat prevents this to a great extent. I use a seven-penny cement-coated box nail for nailing my hive bodies, covers, and bottoms.

* * *

Louis H. Scholl, in the March 15th issue, says: "But after all, the secret is to begin to prevent swarming before the desire to swarm has ever awakened in the colonies." Splendid advice—splendid! In one apiary of 170 colonies I have not had a single swarm issue this season. No cells have been clipped to prevent it, and other apiaries in the vicinity have been wild with swarming.

* * *

The editor's remarks on Dr. A. J. Cook are well deserved, and entirely fitting the man. I have smiled on several occasions, especially at our state conventions, when some small caliber opened up a rapid fire on this big 42-centimeter character. Dr. Cook has left an indelible impression on the beekeeping world as well as in other lines, and no amount of criticism of this versatile character can undo what he has done. We need more men like him—big, broad, scientific men.

I am indebted to Mr. E. Ockerby, of Western Australia, for a government pamphlet entitled "Bee Farming." It contains some very interesting information regarding the bee industry in that great and only partially developed country. I have more to say of this later. Mr. Ockerby is but a boy in years, but a man in knowledge. He is one of a company of some thirty-five boys who are selected from the Young Australian League, which is much the same as the Y. M. C. A., to tour the United States to gain knowledge and experience through travel. No boy can be selected for this trip who does not come up to a certain mental, physical, and moral standard. The expense of the trip is paid partially by the Australian Government, partially by the parents of the boys, and partially by money derived from entertainments given by the talent of the company. No one in this company is allowed the use of tobacco—in fact, they have no desire for it. They are now traveling toward the East. Should any of my readers meet with them, treat them kindly. They are bright boys, but most of them are poor.

* * *

Rainfall has been quite general over the southern part of southern California, ranging in amount from one-fourth of an inch to one and one-half inches. The extreme southern end received the most. As far north as Ventura and Santa Barbara counties no report of rain is given, and the presumption is that none of consequence has fallen that far north. The value of it remains to be seen; but it is my opinion it will be of no great help this season to any thing except possibly the white sage and late buckwheat. The button sage has not developed as it gave promise of doing at one time. There is little hope in many localities from this source, and nothing very big may be expected from it in any place. Hope for a crop from it has already been abandoned in some localities. The orange bloom was never better, and never yielded more nectar: but the best part of the blooming period has passed with the sun under the clouds, and the bees unable to work. The crop from this source has been more than half lost by bad weather. In fact, the general outlook at this writing for orange and sage honey is anything but promising.

BEEKEEPING IN THE SOUTHWEST

Louis H. Scholl, New Braunfels, Texas.

TWO PROGRESSIVE COUNTY ORGANIZATIONS.

I have just had the pleasure of attending a meeting of the Bexar County Beekeepers' Association, at San Antonio, Texas. I am pleased to note the number of organizations of beekeepers increasing in Texas. Time and again I have called attention to the importance of such organizations.

The officers are, Lewis Maverick, president; J. K. Smith, vice-president; E. G. LeStourgeon, secretary-treasurer; Henry D. Grossenbacher, foul-brood inspector. The standing committees appointed are: Wm. Cravens, chairman Legislative Committee; S. A. Gould, chairman Committee on Bee Diseases; A. P. Heinen, chairman Entertainment Committee; Wm. Zimmerman, chairman Program Committee.

The other organization is the Frio County Beekeepers' Association, with Pearsall, Texas, for its postoffice address. George Curtis is president; J. N. Mayes, vice-president; B. I. Gilman, secretary-treasurer; B. F. Cude, sergeant; R. A. Little, foul-brood inspector. On committees are E. G. LeStourgeon, O. E. Milam, and Guy Wood, Program Committee; Frank Talbot, C. T. Hardy, and F. T. Lester, Bee Disease Eradication; J. C. Campbell, C. G. Mayes, and J. C. Eldridge, Entertainment Committee.

* * *

THE TELEPHONE IN BEEKEEPING.

It is a great gratification to the beekeepers that the rural telephone is finding its way into all portions of the country. Nearly all of our apiaries are now located within easy reach of these rural telephones, and they are a blessing in the many ways these can be put to use. It is now quite an easy matter to get information from any of the localities that we are not able to visit ourselves. Most of the owners of the land upon which the apiaries are located have telephones. As they have more or less interest in the welfare of our work with the bees on their place we need only call them up for the information desired.

In several instances such persons have called me up of their own accord to remind us of swarming going on, or that it was their belief that more storage room would be necessary on account of a sudden honey-flow. Only yesterday morning I had a call for help because a heavy downpour, a veritable cloudburst of rain, was threatening one of our apiaries. Had I not received this hurry call, and dispatched men to this apiary eleven miles away immediately, I should have lost all the bees there. In the afternoon another call advised us of several colonies of bees swarming at another apiary. I went there immediately and hived them. With these telephone connections it is far easier to keep in touch with the bees and conditions at the various apiaries, though they be very much scattered, and at long distances from headquarters.

* * *

PROSPECTS IN TEXAS.

Beekeepers generally all over Texas are jubilant over the prospects for a honey harvest. Abundant rains during the last few weeks, and the opening of spring, have finally resulted in all kinds of vegetation making rapid rank growth and in great profusion. The bees are in excellent condition except in a few localities where they have run exceedingly short of stores. Some were "robbed" too closely last fall, and are handicapped by heavy brood-rearing that began very early this year on account of the mildness of the weather in the latter part of January and throughout most of February. Although much cold weather followed thereafter, particularly through March, when we had snow and ice, and some of the coldest weather of the winter, the bees did not suffer. The colonies were exceptionally strong; and with the large amount of brood, which has a tendency to keep the hives warm also, they came through the cold weather, and some of the colonies cast large swarms as soon as warmer weather came.

* * *

INVENTORS OF NEW HIVES.

It is all right for P. C. Chadwick to encourage would-be inventors of new hives, page 53, Jan. 15, provided they really invent something worth while. Otherwise I feel it actually a duty to discourage it. I have on my desk just now a long letter, accompanied by drawings and a patent, from another inventor of a new hive that, in the mind of the originator, will revolutionize beekeeping. To any beekeeper with the slightest experience and some idea about only the general requirements of a good hive, this new invention is but a complicated, impracticable clap-trap affair—even more so than the same kind of inventions of six persons I have received such correspondence from.

Far better it would be if we could dissuade these over-enthusiastic people from

spending a lot of hard-earned money on patents that cost much but which are worth but very little if anything at all. I have more faith in a gradual evolution in beehive improvement than in any radical changes; and I believe also that it is an admitted fact that beehive patents are not very popular with beekeepers of experience; and in spite of the scores of beehive patents that have followed the introduction of the Langstroth hive there has been very little hive improvement through the efforts made by their inventors.

* * *

ALMOST ABSOLUTE SWARM PREVENTION.

I have been exceedingly successful in swarm prevention upon every occasion when I was able to do the "stunt" at the proper time. This "knocking swarming in the head" has been described by me before; but I cannot help mentioning it again, as it continues to prove successful, in my hands at least.

To the experienced beekeeper it is well known, or should be, that swarm prevention ought to be begun by the beekeeper before the bees have the "swarming fever." I found, long ago, that after the desire to swarm has been allowed to come over a colony of bees, and conditions for swarming are favorable, it is exceedingly difficult to keep them from carrying out this desire. Consequentlv I begin operations for this purpose prior to the time swarming actually begins although I have had many satisfactory results from swarm-prevention manipulations, even at times when the bees had stolen a march.

Most of the readers will remember that nearly all of my bees are in divisible-brood-chamber hives. It will also be remembered that I have explained how we winter the colonies in three of these shallow stories, preparing an upper super with shallow extracting-combs partly filled with honey for additional winter stores. I have also mentioned the essentials of this additional super for breeding room in the spring, insuring more powerful colonies, and keeping the bees contented longer than with the old way of crowding them into a smaller brood-chamber. Besides furnishing the extra breeding room this super takes care of any honey not needed in the brood-chamber in the spring, and consequently prevents the clogged brood-nest and a crowded condition, so conducive to swarming.

The above-mentioned conditions already keep the colonies contented longer; but a congested condition of the brood-nest can prevail in even the most roomy hive. And I discovered, many years ago, that the mere addition of room above, below, or even all around such a congested brood-nest may not prevent swarming if conditions for swarming are at all favorable. It is absolutely necessary to break up this mass of brood in order to arrive at the desired results. It is for this reason that combs of brood are replaced in the brood-nest with empty ones or with frames filled with foundation and by various other methods. I aim at the same thing, but in a quicker manner and with less labor.

The manipulations consist of simply exchanging the two lower stories of the hive, placing the lower one on top of the second, which now rests on the bottom-board. Usually most of the brood of the colony is in the second or middle shallow story. The lower one is partly empty, especially in the lower part of the combs. Thus the most of the brood is switched to the bottom, and the empty comb of the former lowest story is now immediately above this, or right in the center of the brood-chamber where it ought to be. As there is nearly always some honey in the upper portion of the combs of the super, now on the bottom-board, and which is now in the center of the brood-nest, the bees soon move it and it is carried out throughout the honey season.

The super is replaced on top of the hive of all normal-sized colonies. It contains some brood and mostly honey unless the colonies have run short of stores, as they sometimes do when breeding heavily. If a colony is very strong, or in the event it is not long until the honey-flow may begin, another super, with the frames filled with full sheets of thin super foundation, is given underneath the shallow extracting-super, and the usual method of tiering up supers thus provides additional room.

If this manipulation is made shortly before the swarming season, and plenty of room provided after that, there is hardly any need of another exchange of the halves of the brood-chamber. This should be watched, however, and a second manipulation made if necessary. The work is carried out so quickly, especially if two work together, and the results obtained are so valuable, that it pays to do it. It hardly takes longer to make a complete operation of the entire hive, as described, than it takes to open up and remove one comb from the regular deep-frame hive when it is desired to exchange combs of brood for empty ones or for frames with foundation. According to my idea the brood-nests are left in a better condition after manipulations than in the deep hives cut up by the inserted combs or frames of foundation.

GENERAL CORRESPONDENCE

HOW TO TELL THE AGE OF LARVAE BY THEIR SIZE

BY G. M. DOOLITTLE

[Several times our attention has been called to the fact that very little has been given which would enable a beginner to tell much concerning the age of a queen larva by observing its size, in, say, a fraction of an inch from day to day; also the age when it straightens out in a cell, the age when it is capped over, etc. We feel that, of all our writers, Mr. Doolittle is perhaps the best qualified to take up a subject of this kind. If there are others who disagree with him we should like to hear from them.—ED.]

The mother queen lays the eggs for the queens, drones, and the multitude of workers which appear in any colony in the swarming season. From three to thirty eggs for queens (according to the race of bees and the prospects of the season) cover the colony's preparation for swarming. From a few hundred to as many thousand for drones (mainly in accord with the drone comb the home of the colony affords), and for from sixty to one hundred thousand workers, which are all provided by the one mother of the colony. So far as the unaided eye can detect, these eggs are just alike as to size, color, etc., an egg laid in a queen-cell, which is not far from 3/8 inch in diameter, being exactly the same as the one laid in a worker-cell which is only about 3-16 in diameter. The eggs for drones are just like the others, except that they are not fecundated. All of these eggs remain about three days in the egg form. Their length is not far from 1-16 inch, and their diameter about that of a fine cambric needle, or something like the period mark used in common printing. In fact, on a cloudy day it needs pretty good eyes to see these eggs, as they are attached to the bottom of the worker-cells; but with the comb in which they are laid held so that the sun can shine down to the bottom of the cells, they are quite plainly discerned, and very much admired by all who visit my apiary and see them attached and standing on end.

At the proper time, or about ten or fifteen minutes before the eggs should hatch, the nurse bees apply a little chyme, or what one writer calls "the milk of bees," to the eggs, when they soon go out of sight and a larva appears. Just what becomes of the "egg-shell" was a question I was always wishing more light on, but so far I am in darkness. A larva just hatched is even harder to discern than the egg, as it lies in a partially curved state floating on its milky food at the bottom of the cell. All I can think of as describing it would be a coarse spider-web, or a very fine hair, a little more than 1-16 inch long, and quite a little smaller at each end than at the middle. When twelve hours old this larva has assumed a crescent form, something like the new moon, and about the size the egg was from which it hatched. By shaving the cells down so they are only 1/8 inch deep, and holding them with the open ends so the sun will shine on the milky food, these larvæ can now be seen quite plainly, even to the motion of the mouth as they are feeding, for they are voracious eaters at all stages of their larval existence. I have many times used these twelve-hour-old larvæ for queen-rearing; but after many experiments I do not consider them any better than those 36 hours old. At this age the bees accept them, which they are not inclined to do nearly as readily as the older ones.

When 36 hours old the larvæ are still further "coiled up," something like a cat when preparing for sleep, and have attained a length of about 3/32 inch, their diameter in the largest place being about 1/32 inch. These are the larvæ which I always select, as nearly as may be, for transferring to the cell cups when rearing queens. From many experiments and much careful observation, such larvæ as these are the ones selected by any colony of bees during a copious flow of nectar, where the apiarist takes away the queen that the bees may rear others to take her place, or for his use in the apiary. At 48 hours the larva has reached a length of about 1/8 inch, and a diameter of about that of a coarse sewing-needle. If such larvæ are still floating on the milky food, good queens will result from their use, but otherwise they should be rejected. At 72 hours the larva has nearly doubled the size it was 24 hours before, and attained a length so that the extremities nearly or quite touch each other as it lies curled up in the bottom of the cell. A careful observation at this stage will reveal that, with the majority of colonies in a normal condition, very little chyme can be seen in the bottom of the cell, or surrounding the larva, which shows that they are being fed a coarser food so that they may become the working force of the colony rather than fully developing them for becoming a mother.

From now on to the sealing of their cell,

little if any food will be discovered in their "feed trough." But I note that our questioner asks about a queen larva. Up to about 60 hours old all larvæ are treated alike as to their food—that is, they have before them all they can possibly eat, all the while, and "enough is as good as a feast." The larva in a queen-cell floats on a "sea" of chyme. The larva in a worker-cell floats on a "lake" of this same milky food. But when they pass these hours, the "sea," with the larva intended for a queen, becomes an "ocean," while the "lake" of the larva intended for a worker becomes first a "pond," and then that dries up altogether, a coarser substitute taking its place. In other words, all fecundated eggs give queen larvæ to all intents and purposes up to the time such larvæ are 48 hours old, and the food given by the nurse bees thereafter decides their fate. A 96-hour-old larva can be changed over to a partly developed queen, which will become fertile and lay fertile eggs for from a few weeks to a few months; but these are small in size, and soon "play out" entirely. As a matter of existence, such a queen will carry along a colony so that, through her supersedure, the colony may go on to a fair prosperity again.

As regards the further development of the queen larva: It grows very rapidly from now on, and at the end of about 5½ days after hatching it is about one fourth larger and longer than is a worker larva when six days old. At this age both are sealed over, after which both commence to spin their cocoons preparatory to the pupa or nymph stage and the emerging of a perfected queen or worker; but there is this difference—the queen larva is fully developed in about seven days, while it takes twelve after sealing to perfect the worker, this time being somewhat lengthened or shortened by the temperature of the weather and the activity of the colony.

And now, Mr. Beginner, pardon just a word: If you wish to reach the full stature of an apiarist along all lines of our beloved pursuit, just take the time to go over the whole ground in this matter yourself. Get the A B C and X Y Z of Bee Culture spread out before you regarding this matter of "from the egg to the perfect bee," and prove by your own observation and experiments whether the writers of the past have found out all there is to be known on this subject.

Borodino, N. Y.

SWARM PREVENTION

BY J. E. HAND

G. M. Doolittle ingeniously likens the swarming impulse of bees to a broody hen. While agreeing that the similitude is perfect, I am not in sympathy with his method of eliminating the broody condition. A wide experience with poultry has taught me that a pullet of a good laying strain will seldom become broody during her first season, and an equally wide experience with bees has taught me that queens are less inclined to broodiness and voluntary supersedure (which is the direct cause of swarming) during their first season. While this trait in bee nature is not sufficiently developed to warrant depending upon ordinary methods of supersedure for swarm prevention, I have ascertained that a correct method of queen supersedure is the more safe and economical solution of the swarming problem. The question is, how shall we prevent swarming with the least expense for labor and equipment, the most important factors in the economics of honey production?

While the broody condition that usually culminates in swarming is shared by bees and queens alike, we have found that the remedy is more effective and much more economically applied to the queen with as little disturbance of the brood and bees as possible. These are excessive manipulations that multiply the cost of honey production. We learned a long time ago that destroying queen-cells to prevent swarming is equivalent to shooing a broody hen off the nest to prevent sitting, and that both are a waste of time and energy, for the broody hen will return to her nest, and the broody queen and bees to their queen-cells. Dropping the analogy relative to the hen, the question is, "What is the more economical and practical method of eliminating this natural condition of broodiness that usually results in swarming?

Shall we resort to the excessive manipulation of hives and combs, removing brood that will soon become bees, and peddling them promiscuously about the apiary, all of which excessive manipulations are involved in the shake-swarm method advocated by Mr. Doolittle? or shall we practice the equally laborious method of removing

queen-cells once a week, involving excessive labor in manipulating brood-chambers heavy with supers as advocated by R. F. Holtermann and others? or shall we practice dequeening with its deleterious effects upon the working qualities of bees, likewise involving excessive manipulation of brood-chambers heavy with supers, to detect signs of swarming? I repeat it, Shall we resort to the abnormal condition of queenlessness with its psychological depression upon the energies of bees, as advocated by Dr. Miller?

Is such excessive labor conducive to economical honey production, the desideratum of every method of beekeeping? Since swarming is a natural impulse, it is imperative to combat it with purely natural principles. Assuming that all preconstructed queen-cells are supersedure cells, the supposition is that their construction indicates a desire for a young queen. This supposition becomes an established fact when the correct method of requeening eliminates queen-cell construction with its attendant evil "swarming." Here is the method, requiring as much time to do it as to name it. "Remove the queen and insert a ripe queen-cell, removing cells while looking for the queen."

The story is told in sixteen words, and the operation is performed in as many minutes. If done with a strong colony at the beginning of clover harvest, swarming is prohibited by a combination of purely natural forces; and the desire for a young queen being satisfied, the colony will work with a vim and energy that denotes contentment and satisfaction—a psychological condition that cannot be maintained by combating nature by abnormal methods. I might deliver a long discourse explaining the philosophy of the principle, which might be only theorizing, hence I will only say, "Try it and be convinced."

Birmingham, Ohio.

INTRODUCING A QUEEN BY DEMORALIZATION

BY A. C. AMES

A great deal has been written concerning the introduction of queens; but yet little has been said in support of one of the best methods in use, and that is the introduction of a queen to one to three pounds of bees which have been placed in an unnatural condition. It is a well-known fact that when bees are in a demoralized condition one can do many things with them that cannot be done otherwise. This way of introduction may be varied to suit local conditions. The main point is to have the bees in an unnatural condition.

The plan I favor is as follows. Shake from one to three pounds of bees into an empty hive. The bottom of the hive should be fastened and the entrance stopped. To keep the bees from freely leaving this hive I usually wet the inside with water and leave about a quarter-inch of water in the bottom. Then, to make sure they are thoroughly demoralized, I put the cover on, bump the hive on the ground, and give them a good rough handling.

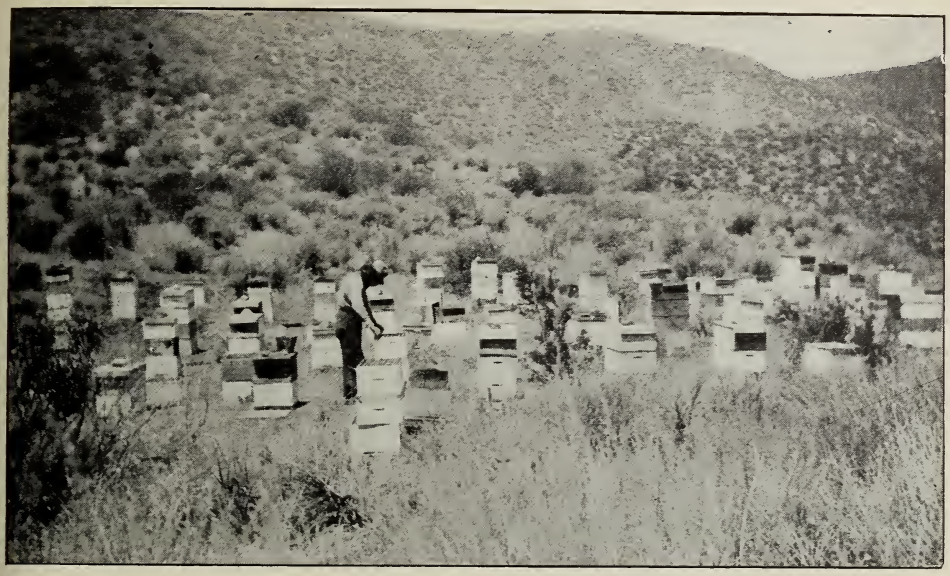
With the last bump I land all the bees in the bottom, lift the cover, and place several combs in the hive, the number of combs depending on the amount of bees used. I now either run the queen in the entrance or just throw her in among the bees in the bottom of the hive. These bees are now either carried to an outyard and released, or, if to be kept in the yard that the bees came from, they are confined for two or three days.

It may look as if this is a whole lot of work. It is more work than some other methods, but the results are sure—at least that is my experience. As a way of making increase after the main flow, it is excellent. At that time there is always a lot of bees which can well be spared for this purpose.

When I wish to replace a poor queen I usually try this method. After the queen has started to lay I take brood from the queen I am going to discard, and with the help of the two queens it is possible to build the new colony to good strength very quickly.

Keep the poor queen at work until all her hive makes a good place to go to get a frame of brood when one is wanted, or her stock can be used for further increase. At the end of the season the remnant of her colony can be used to strengthen some weak colony for winter. In this way one gets the full benefit of a queen which is going to be discarded. Where one has several of these queens in a yard their brood is a big help in making increase or keeping the yard in first-class condition for strength.

Peninsula, Ohio.



Sixty colonies in the mountains near Hanford, California.

SITTING TIGHT FOR BETTER PRICES

BY M. J. SAIN

We have fine prospects for a good crop here this year, and splendid prospects of having to keep on storing away our honey for future use. Just as long as we have free trade, I suppose we producers of honey, as well as the olive-oil producers and a few others, will have to use lots of grit, and hold on until a change comes. I shall be one who will hang on. I can keep storing it away as long as I can sell enough here and there to buy the lumber to make room for it.

My bees are in fine condition this spring—the best I have ever had them. I expect to run for comb honey in the sage flow this year, which will be my first attempt at this to any extent.

My apiary in the mountains consists of sixty colonies in ten-frame Langstroth hives. They produced eight tons of honey, but no increase to amount to anything since the honey-flow came on unevenly. One day we would enjoy a good flow, and the next almost nothing. I believe this was due to the windy weather.

Hanford, Cal.

HONEY EXHIBIT AT THE MINNESOTA STATE FAIR

BY P. J. DOLL

Minnesota people are naturally proud of their State Fair, which is always held the first week in September. The grounds, covering 265 acres, are located midway between Minneapolis and St. Paul. The combined population of these two cities is over 600,000. Nearly 400,000 visitors attend the State Fair every year.

These people are a patriotic and unselfish lot. They enjoy prosperity in a state of boundless possibilities, and wish others to enjoy the same blessings, so once a year they get together and show to each other and to the outside world what they have been doing the past year and invite others to come and share with them the bounties Nature has lavished on their state.

It would take a large volume to tell of the different exhibits at the fair, so in this short article I shall confine myself to the honey exhibits alone. The Minnesota Beekeepers' Association, working with the fair management for a number of years, has built up the honey exhibit from year to year until now we probably have the largest and finest display of honey ever made.

The Apiary Building, used exclusively for the display of honey, wax, bees, and

M. J. Sain's apiary in a young apricot orchard.

bee-appliances, is 144 feet long by 70 feet wide. More than $700 is appropriated for the maintenance of this building. Besides, there is appropriated $1168 for premiums on honey, wax, and bees, making a total of nearly $1900 annually devoted to the encouragement of beekeeping.

The premium honey is all displayed in fourteen glass cases arranged around one side and both ends of the building, about five feet from the wall, so visitors can go all around each and every case to inspect the display, and also so all the honey is visible at one glance inside of the building. In the center, against the other side wall, is conducted a demonstration of extracting honey.

In 1913 this extracting demonstration was one of the big sensations of the fair, when Francis Jager, now professor of bee culture at the University of Minnesota, brought 12,000 pounds of honey to the Minnesota State Fair in nice, clean, white extracting-frames, just as the bees made it, in well-painted, well-constructed supers. This honey was uncapped, extracted, bottled, and labeled during the fair week, for the entertainment and instruction of the public.

A speaker on the platform explained how the bees gather honey, pollen, and propolis; how bees make wax; the difference between comb and extracted honey, and explained in detail the workings of the extractor, which was kept running all the time. Two men were uncapping honey with steam and electric heated knives over a Peterson capping-melter. Another man managed the four-frame power-driven extractor and pump which emptied the honey into two one-hundred-gallon storage tanks.

Above the bottling-table was a honey-heater which could be regulated to heat the honey to any desired temperature before putting it into bottles. Two girls were busy draining the honey into quart, pint, and small bottles. Two more girls at a counter near by were giving free samples of honey on triskets to the public. In this way 57,000 helpings of honey were passed out during the week, and about 15 gallons of honey were used up.

People crowded around the place all the time. The daily papers of St. Paul and Minneapolis had write-ups about this demonstration every day for ten days. It certainly pays to advertise, especially when the advertising doesn't cost anything, and we did not pay the newspapers one cent in money; but we did occasionally slip a bottle of honey to some of our good friends who helped our cause. I am convinced that a small bottle of honey well placed will do more good than a ten-dollar note.

This demonstration alone cost the fair management about $500. They insist that we must have it again, and this year we are planning on extracting 30,000 pounds of honey, using all the different kinds of extractors, wax-melters, and implements used by up-to-date beekeepers. We also will try to work up some kind of contest to show

which kind of extractor or capping-melter is best adapted to the needs of different classes of beekeepers.

On the same side of the building with the demonstration of extracting honey were the displays of three different bee-supply dealers who are allowed space for display of their goods at a very small charge. On the same side, also, was a glass observation hive with both sides of all eight frames exposed to view, covered with live bees which had free access to outdoors through a hole in the wall. Right near this were specimens of Minnesota honey-bearing plants, pressed and dried, and put into individual frames, with its name below each plant.

In front of the main entrance to the Apiary Building there is a little park in the shape of a triangle with a nice well-kept lawn trimmed with flowers. In the center of this spot there was an octagon-shaped screen cage, about eight feet in diameter, in which there was a sort of vaudeville performance with live bees. This proved very interesting to the public, and attracted people on all sides, who, after being entertained with the live bees outdoors, would be induced to go inside and see the other attractions inside of the building. Our main trouble was that our building was too small to accommodate the crowd who wanted to get in.

Around different parts of the fairgrounds we had twenty-two colonies of live bees flying at will right among the people. Strange as it may seem to many beekeepers, nobody seemed to be afraid of the bees. Little children were playing in front of the hive entrances, letting the bees crawl over their hands, and thinking it great fun. I did not hear of anybody getting stung, and I was around every day and all the time.

I don't believe there is a better way to advertise honey. No doubt it was worth thousands of dollars, and it didn't cost the beekeepers one cent. Beekeepers ought to take more interest in their State Fair exhibits. That is where people come to look and learn. They are not in a hurry; and if you will present something interesting there is no trouble in getting an audience all the time. If beekeepers will all help to advertise honey this way, there will be such a demand for honey that the price will be considerably advanced.

It is estimated by conservative people that Minnesota now produces about 2,000,000 pounds of honey annually. Most of this is consumed by the farmer beekeepers and their neighbors. Less than half finds its way to the cities. Less than 500,000 pounds of this comes to Minneapolis and St. Paul —not enough to give everybody in these two cities a pound each during the year.

Beekeepers talk about overstocking the market with honey. No doubt the public is willing to buy all the honey we can produce, even if it were fifty times as much, which would be only enough to give everybody a pound a week. It is true that in this city there is sold three and four times as much western honey as there is Minnesota honey; but I believe the market in all parts of the United States could be developed to consume all the honey we are able to produce.

Minneapolis, Minn.

BEES AND BERRIES; BEES TROUBLESOME AT STRAWBERRY-PICKING TIME

BY JEAN WHITE

There seems to be quite a difference of opinion as to whether bees damage fruit or not. I keep bees and raise small fruit, and I am quite sure that I should not care to raise some kinds of fruit in the vicinity of a large apiary. A small beeyard and a small-fruit plot would show practically the same results. The bees do not harm the fruit until it becomes fully ripe and sweet. At this stage they are able to suck the juice from the berry, and do so. My strawberries, red, black, and purple raspberries, all showed this plainly. Every fruit that was overripe was sucked as dry as if evaporated for market. In picking, it required the utmost care to avoid picking a bee, as some berries would have two, three, and sometimes four bees upon it. As I raised fruit before raising bees I noted the dry berries quickly, never having seen any until the bees worked upon them.

I am of the decided opinion, notwithstanding the so-called proof that bees do not puncture fruit, that in the case of thin-skinned fruits of considerable sweetness when ripe, they do break the skin to get the fruit sugar. Bees that can and will eat a way through a paper or cloth placed between them and liberty, or between them and honey or some substance that they particularly desire to get at, can, if they so desire, easily puncture the skin of the ordinary raspberry. Birds may and do break a good many; but as the raspberry or black-

berry is a collection of tiny separate parts, not all of them would be broken; yet the raspberry in a short time is sucked perfectly dry of juice. My bees did not work extensively on the strawberries or blackberries, although they did some work there; but the red raspberries they were as crazy for as they would be for a lump of sugar. Raspberries cannot be picked very unripe, as they adhere to the core, and crumble if forcibly removed. If picked closely every day I do not think the bees would injure many; but in picking for home use, or for markets near by, I feel sure the bees would take their toll quite freely. They did of my home berries picked every other day, but left till fully ripe, as otherwise they are sour and not of as good flavor as when sweet and ripe. I firmly believe they puncture the thin delicate skin themselves, or it may be that it is so thin that they suck the juice through it.

Bees were not nearly so plentiful among the fruit-bloom in the spring as in the later season among the fruit. For home use this was not particularly annoying; but I can well believe that in commercial fields they might do a good deal of damage. As I preferred bees to berries I was not distressed; but I can see that the fruit-man might not feel just that way about it. As larger fruits are usually picked for market before fully ripe they very likely would not prove very troublesome; but with small fruit sold near at home, and not picked until ripe, I am quite sure bees would prove a nuisance.

Bees are supposed to fertilize cucumbers. Our cucumber-beds were within a few rods of the bees this season. They did not produce as well as they should. I hardly ever saw a bee near them. Whether this was because of better feeding-ground near at hand, or because the large leaves from the vines hid the blossoms completely, I do not know; but the bees did not visit the cucumbers as freely as I should have expected them to.

Glover, Vt.

[It is a well-known fact that bees will work on overripe fruit, and they are often troublesome in this way, especially at fruit-picking time. It has been definitely proven, however, that bees cannot puncture the skin of the fruit. It must be punctured by some other insect, by a bird, or, as sometimes happens, by bursting due to the overripe condition. Now, then, the question is whether such fruit as is punctured by birds or insects, or burst because of being overripe, is of any value, commercially speaking. Such fruit will always rot almost immediately, and the contention of the beekeeper has always been that the bees in sucking the juice from such really unmarketable fruit is no loss, for the fruit then dries up and the rot is not communicated to other fruit close by. This is especially true in case of grapes, and should also be true, we think, in the case of strawberries.

Bees are used so extensively for pollinating cucumber-blossoms that we feel sure there were other flowers more attractive to the bees in blossom at the same time.—Ed.]

VALUE OF BEES IN STRAWBERRY CULTURE

BY L. T. FLOYD

Some time ago while traveling I chanced to mention to some people whom I met that we had received one thousand dollars for the crop of strawberrries we had grown on an acre on our farm at Central Norton. From them the story found its way into the local paper, and since then we have received many inquiries about it; and as the subject seemed to be of interest to so many I want to state one of the reasons for our getting this crop in a year when berries were generally a failure.

We had a fairly good stand of plants on this patch the season before. They wintered fairly well, but the spring was backward and cold. They began to bloom about June 1. On the night of June 4 we had a heavy frost which killed all the blossoms down to the smallest buds. We thought our crop was doomed, because we remembered a season about seven years before when a lighter frost ruined our crop. This was before we began keeping bees.

The evening after the frost it rained—a good soaking rain. This caused the plants to set more fruit-buds. Out of the crowns where one or two fruit-stems had been before, there sprang many more; and in about ten days the patch was white with blossoms again. Near this patch we had fourteen colonies of bees, and at this time of year the hives were brimming full, and every fine day while the plants were in bloom one could hear their busy hum quite a distance from the patch.

The spring being so cold, there were very few wild bees or other insects, and so we had to depend solely on our own bees for

the fertilization of these blossoms. They made a good job of it.

How do we know? Because, as the season drew near its close, every blossom that had not been frosted grew a berry. There were none of the small hard knots often seen toward the close of the harvest.

How much do you think those bees were worth to us on that crop of berries? We place it at hundreds of dollars, but this is only an estimate.

One thing we are sure of, and that is that it pays well to have a good crop of berries in a year when they are scarce, and high in price. We know the bees were largely responsible for this.

We had more than half these berries picked before it began to dawn on us that we were going to have a crop. We had been sure the frost had fixed them. The sooner that fruit-growers find out the benefit that our little friends are to them, the sooner they will catch the dollars that are slipping through their fingers because of imperfect pollination. The profits in bee-keeping are not all to be counted in the number of pounds of honey harvested.

Central Norton, N. B., Canada.

BUSY BEES OF BELGIUM

BY JAMES B. PAIGE

In describing the country traversed by the railroad between Liege, Belgium, and Aix-la-Chapelle, Germany, Baedeker in his "Guide-book of Belgium and Holland" says: "The country traversed by the line between Liege and the Prussian frontier is remarkable for its picturesque scenery, busy manufactories, and pretty country houses, while the engineering skill displayed in the construction of the line is another object of interest. The picturesque stream which the line crosses so frequently is the Vesdre, and pleasant glimpses of its wooded banks are obtained on both sides of the train. This is the most beautiful part of the journey between England and Germany, and should if possible be performed by daylight."

Jos. Crutzen's apiary, Quatre Chemins, Henri Chapelle, Belgium.

Having had the pleasure during the past summer of making the journey in the reverse order given by Baedeker, that is, from Aix-la-Chapelle to Liege, by automobile, over an excellent macadam road that followed the railroad and river the greater part of the distance of 38.9 miles, as registered by the speedometer, the writer is in position to state that the author of the guide-book has in no particular exaggerated in his description of the beauties of the country.

At Tulgie, 5.7 miles

from Aix-la-Chapelle, one traveling by automobile goes through the ordeal of a custom-house inspection. This concluded and the journey resumed, he arrives at the first town in Belgium, Henri-Chapelle, where the well-tilled farms, large herds of cattle, capacious barns, and neat and comfortable houses, surrounded by flower and vegetable gardens, testify to the industry and thrift of the Belgian farmer and his family.

In a limestone section one naturally expects to find an abundance of white clover and other nectar-producing plants. In this respect the valley of the Vesdre is no exception to the rule, for white clover grows everywhere in profusion.

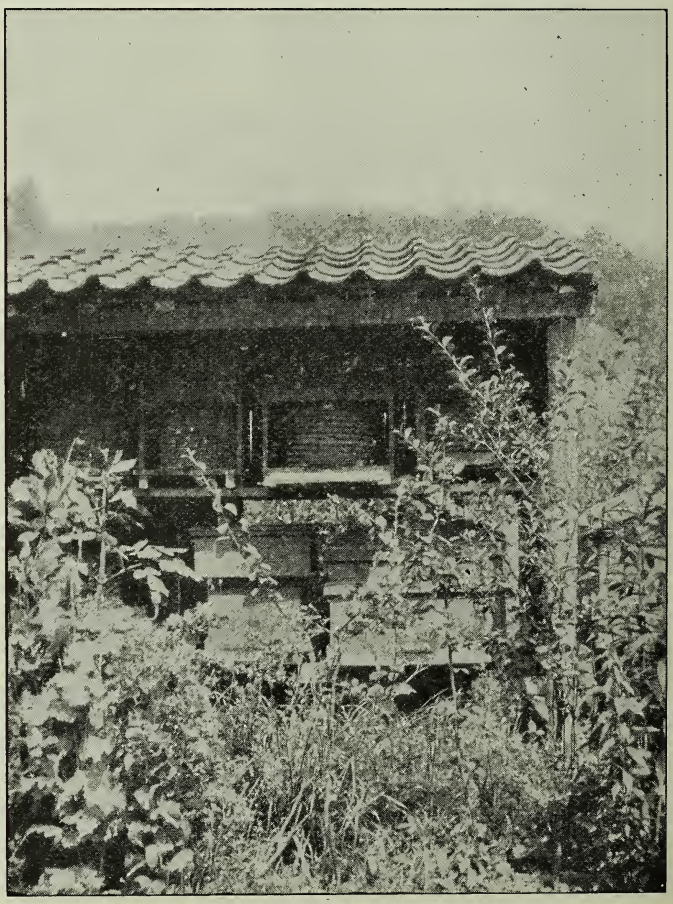
Under such conditions an apiary constitutes a valuable asset to the equipment of a farmer, more especially a Belgian farmer, whose areas for cultivation are relatively small, and who must, of necessity, practice an intensive system of agriculture.

The accompanying picture of the twelve-colony apiary and the tile-covered beehouse of Jos. Crutzen, at Quatre Chemins (four corners), Henri-Chapelle, gives a good idea of the farmer's apiary of Belgium. The orderly arrangement and spacing of the hives, the presence of supers, with numbers to correspond with those on the hive-bodies, and the neat surroundings all indicate that attention and care are given to this secondary industry on this particular farm.

I think it is a safe prediction that the care of the bees devolves upon the good wife of Mr. Crutzen. Certainly she evinced particular interest in the picture-taking, and was so good as to write her husband's name and address in my journal.

Between Verviers, noted for its cloth-manufacturing, and Liege, famous for the fortifications that stayed the progress of the German army in its recent invasion of Belgium, is the small town of Trooz. The route at this point is especially picturesque. The river, road, and railroad run close together in the deep valley. Near the railroad station, where we ate our luncheon on July 1, was a well-kept flower and vegetable garden which contained a small apiary belonging to an artisan who lived in a modest cottage on the slope of the hill across the highway. One might infer from the surroundings that the owner derived a large amount of pleasure and some income from his few hives of bees.

The skeps above, the box hives below, the red-tiled roof on the beehouse, the bloom of flowers, and the merry hum of the bees, produced in one, upon the spot, a sense of pleasure that description and the black and white of the photograph cannot convey.



Apiary at Trooz, Belgium.

A ride of six miles from Trooz brought us to Liege, where we remained for the night. Here we found great excitement and activity. All through the night the streets were thronged with excited people. At daybreak troops were marching through the streets; people were congregating in crowds outside the banks to obtain their money; horses were taken by the military authorities from the carts in the streets, to be led to the nearest blacksmith shop to be shod for immediate service, and automobiles were commandeered for military use. Belgian paper money was refused at places of business, and American Express checks shared a like fate at the hotels. Having learned that the Belgian Government had issued an order that no motor vehicles should leave the country, our party was particularly anxious to save its means of transportation. After a hurried conference it was decided that a start should be made for the nearest point on the Dutch frontier in hopes that the customs official might not have received the recently issued order, and that we might succeed in getting the automobile into a country more neutral than Belgium had the appearance of being. Our run of 16.7 miles, on the morning of Aug. 1, through Visé, landed our party, baggage and car, across the border, and we congratulated ourselves that we had planned and executed well.

As I write this article I naturally recall to mind the surroundings of the orderly and well-kept apiary of Jos. Crutzen at the "four roads" of Henri-Chapelle, and that of the artisan of Trooz, and wonder whether they are still there as they were July 31, 1914, or have shared the fate of Louvain, Malines, and Tremonde.

Amherst, Mass.

A CROP OF EXQUISITE ORANGE HONEY IN FLORIDA

BY EDWIN G. BALDWIN

The orange season this year has been the most erratic that I have noted in ten years. In the first place, the bloom was very heavy. But the cold and inclement weather kept bloom back, so that it did not open evenly, and as a result it not only began late, about the first of March, slightly, but also did not yield well till end of March, and even then was very uneven. For instance, a hive on scales, here at Deland, showed only a pound or two gain for three weeks in March, and on one or two occasions it lost steadily for three or more days, owing to cold weather. We even had a slight frost on two occasions in early blooming time, while some of the bloom was out on the trees. But about the last week in March weather began to improve, and, for a wonder, the bloom held out and yielded abundantly; in fact, it has lasted till now, the 20th of April, and today the hive showed a gain of three pounds. That shows that the flow is easing off, and will be gone entirely in a few days. I can now form a pretty good estimate of the flow and of the orange season. It will be, for this locality, about half a crop, I think —perhaps more, owing to local conditions and management, condition of bees at beginning of flow, etc.; but for an average I think about fifty per cent of last year will be about right. Recall that last year was a bumper crop. My best hive this year will give about 150 lbs. as against 200 for the best hive last year. The average will not be so nearly on a par with last year, however. I find more unevenness in hives this season. The cold weather gave powerful colonies—colonies powerful early—a decided advantage that they would not have had if the season had been normal in temperature. Not long ago I remarked, in the *Review*, on the much later time of flow from orange, in California, for there April is their big month for the yield. Here I have never before seen orange yield later than April 10. This year fully one-half of our honey came in *after* the 10th! How is that for a record of ten years' comparison? Surely we never know what is in store for us. Those who had their dish right side up got a good crop—more than an average crop, perhaps, take it one year with another. Of course it is not fair to compare altogether with last year, which was very extraordinary.

One thing more I wish to note. The flow this year would fluctuate in quantity, even on days when bees seemed equally busy, more than I have ever before noted. For example, on one day the scales would show a gain of 11½ lbs. (my best one-day yield this year), and the next day it would drop to four or five; then seven, then eleven, then four, etc. I never saw it like that before, and I admit it kept me guessing. Some days I could about judge the cause. For instance, one day it might be very hot and dry, and a hot dry day shortens the flow for that particular day, because nectar dries up readily in an orange-blossom when the air

is dry. Again, when weather would be lower in temperature on any particular day I could usually note a slight drop in amount stored, though even cold weather, after bees got well into supers, did not always lower daily records, for on several cool days when I predicted a slight gain I would be surprised to note a decidedly heavy gain; but as a rule the yields kept near the temperatures. And cross? ugh! I think I have never seen bees so frantic. It seemed to them that the flow was going to stop any moment; and all readers of GLEANINGS know what a failing flow means to the tempers of the bees. Well, this whole season it has been dangerous to go near the apiary unprotected. Did I not have a hive on scales right through the flow I might be at a loss to know the reason for this show of temper; but as it is, I can judge pretty nearly the cause, I think; for, as I said, the flow was most erratic, and so were the bees!

I have just at hand a letter from friend Galyean, of Plant City, about 100 miles further south than Deland. He says that the flow there did not begin till about April 1, and that it lasted but ten days for them there. He adds, "Orange will not probably average more than 10 lbs. per colony. I predict the poorest year since 1904 for our county" (he is speaking of Hillsboro Co., just north of Manatee).

But there is no loss without some gain; for the quality this year is the *best* I have ever seen, or, rather, tasted, or both. It is exquisite, with the emphasis on the "ex."

Deland, Fla.

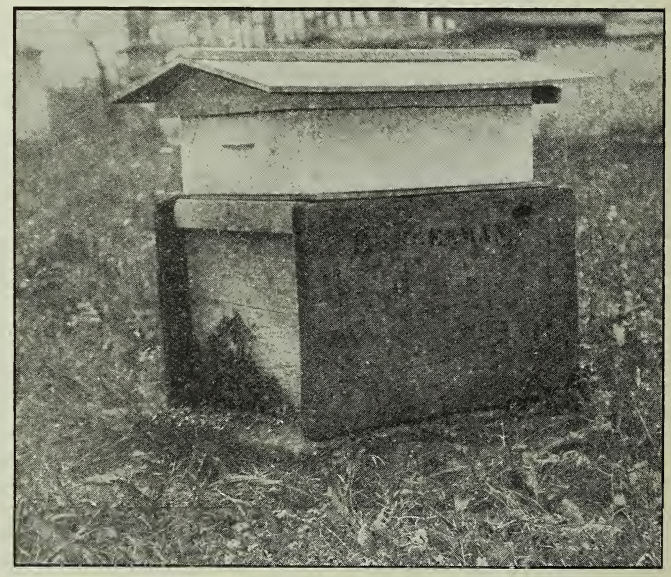
A COLONY OF TWOSCORE YEARS

BY STEEN FREEMAN

This hive and colony of bees have been doing business right here for over 40 years. I do not know just how old it is, for my father purchased four colonies, and this is the only one left. It is a movable-frame hive, but the combs are so built that the frames cannot be taken out.

I have rigged it up so it takes the regular Ideal super, and I think I get an average of 20 lbs. from this old colony. The hive stands in the center of an old apiary of thirty eight-frame hives, and I expect to preserve it as long as I can.

Wamsley, Ohio.



Hive and colony forty years old.

A WINTER LOSS OF 25 PER CENT; CAUSES OF WINTER LOSSES

BY R. F. HOLTERMANN

During the last week or so I have been through the greater part of our bees, and have reports from my season's help from the rest. There is a loss of at least 25 per cent of the colonies of bees, and quite an undesirable percentage of weak colonies among those left.

Last fall in an article contributed to GLEANINGS I stated that I could not see my way with absolutely no bee pasture and upward of 800 colonies of bees to extract from the brood-chamber, the honey mixed with honey-dew. Next with the war coming on, and the difficulty of many to get hold of

what little money they had a right to, and the increasing difficulty of selling honey in our Canadian west, and some three thousand dollars' worth being left unsold for two seasons, I did not feel inclined to feed sugar syrup very heavily, running chances on the bees having a cleansing flight during the winter, and watching them for stores early. The season was very open until Dec. 1, causing the bees to consume an unusual amount of stores during the late autumn, and of them the sugar syrup went first.

I find the cause of winter loss as follows, naming the causes in the order of importance.

Dysentery—from the honey-dew in the winter food.

Starvation—owing to open fall and increased activity caused by bad stores.

Chilling—owing to the poor season and absolutely no late summer and autumn gathering by the bees, small clusters of bees perished, some starving to death, when in another part of the hive there was abundance of honey.

Queenlessness.—Having a large number of colonies, we do not examine them in the fall for queens, and a percentage are queenless, undiscovered by us until we find the pollen-clogged combs in the hive the following spring.

At some point in our feeding, a mistake was made in the water and sugar measurements, which gave us a much thinner syrup, and, of necessity, less ripe stores for the bees. There was no way of telling how far this extended, and the only remedy lay in giving more to feeding all that had been fed, more, which I did not feel like undertaking.

If bees had wintered well, and a good honey crop had been obtained, I do not know what we should have done with our honey. Providence sometimes steps in when experts do not know when to quit booming the bee business.

Brantford, Canada.

EXPLOITS OF AN AMATEUR BEE-HUNTER

BY H. P. KIRBY

One of the most fascinating outdoor sports, if one would deem it a sport, is bee-hunting. An ideal time to begin the hunt is some bright sunshiny morning, just before fruit-bloom, when there is not much nectar and pollen for the bees to gather.

First you will need a bottle of honey and a bottle of vinegar to dilute the honey. You will need something to feed the bees from. Take an old chalk-box and put a glass slide in the place of the wooden lid. At one end place a small trough or lid to hold your honey, and bore a one-inch auger-hole at the other end in the bottom to let the bees in. A handy arrangement by which to catch the bees for the box is composed of two funnels made of wire cloth. Slip one into the other, so as to make it like a fish-net funnel, and close the small end.

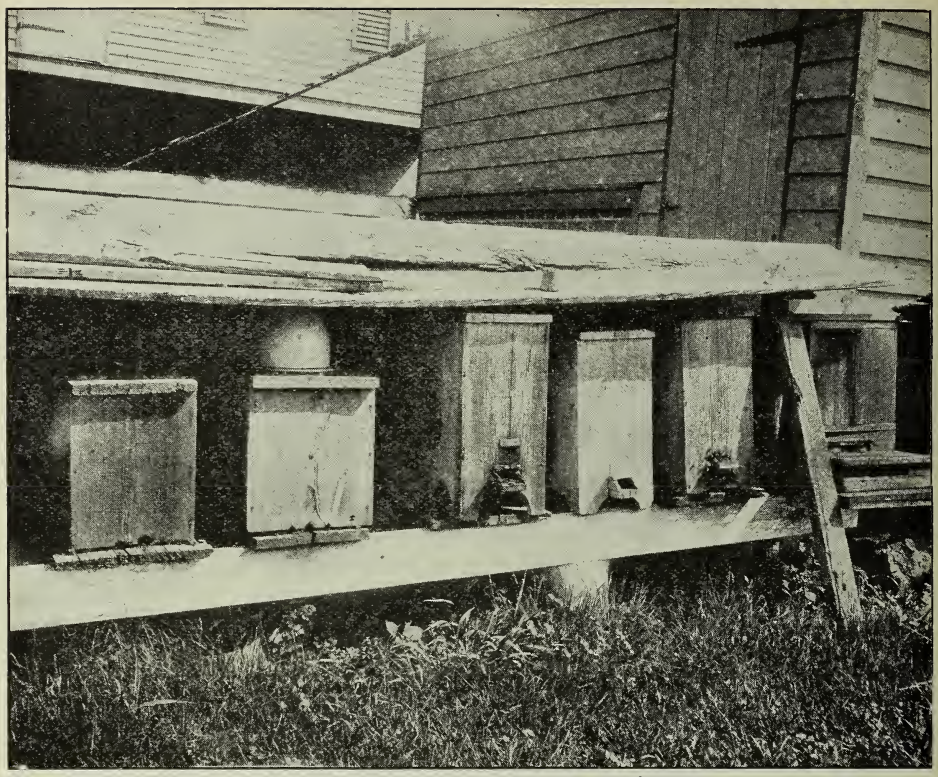
You are now ready to go after them. Find some bees watering at some spring. Some on flowers will do; but if you can find some watering you can conclude that they are close by. Catch several bees in your trap. Then take them out in an open place close by and put them in your box through the auger-hole by opening the end of your catcher and thrusting it up into the hole. If they do not go up at once, darken the lower portion and then they will go up. Then darken your box by putting a cloth over it and place it in an elevated position. Wait about three minutes for the bees to fill up. After this time has elapsed remove your cloth and slide your glass cover out. At first they will fly around and around till they get their bearings. Then they will go in a straight line to their home.

After you get their line, and plenty of bees are coming to your bait, close the box with the bees in it. Move on in the course which the bees followed. Repeat this several times, all the time keeping watch for their den in the trees. If you will place yourself in a position so that the sun will be on the opposite side of the tree you can see them very easily as they fly back and forth.

My friend and I often hunt bees, and have never failed to locate them where we found them watering. If you don't find them the first time, keep trying and finally you will succeed.

We found where bees were watering at a mountain spring about one and a half miles from home, so one bright morning we took our outfit and went after them. After we reached the place we followed the plan I have related and soon found two trees inhabited by bees. One was about a quarter of a mile from the spring, and the other about a half.

When we were ready to cut the trees the



Box hives the menace of modern beekeeping.

roads were very rough, so we just packed our things and carried them. We made two small hives, two stories high, out of half-inch lumber. Each super held four frames 5⅝ inches in width, making eight frames to the hive. The bottom was nailed on, and the supers stapled together. When the weather is very warm we use a wire screen tacked on the top to give the bees plenty of air. It is very handy to have a rope to fasten around the hive at both ends; then you can swing it over the shoulder, and that makes it very easy to carry. We took knives, saws, and other tools for transferring the combs to the frames. It takes several hours to cut the tree and to transfer the combs and bees.

After bees get accustomed to their civilized life one can remove the frames from the small hive and put them in the regular ten-frame supers.

Scottsboro, Ala.

A MEDIEVAL BOX-HIVE APIARY

BY CHARLES Y. HAKE

This picture represents an old apiary started in 1879. The shed complete, and all but the two hives in the center, date from this time. Some of them were almost too fragile to move, and required two men to handle on account of their weight in stored honey. Where these hives came apart through age, and left large openings, some of them an inch and a half in length, the bees had them tightly closed up with glue. The hive at the extreme left, beyond the posts of the shed, was constructed on the leaf plan. The others all have crossed sticks to hold up the brood-combs, with crocks and common boxes for supers. The bees passed through a hole about 2½ inches in diameter in the top of the hive up into the super which was set over the hole.

York, Pa.

AUTOMATIC STIMULATIVE FEEDING

BY E. F. ATWATER

I have never been satisfied that the practice of regular frequent feeding for stimulating brood-rearing before the honey-flow is always or often profitable. However, there have been short periods when it has been highly profitable.

For most spring seasons, probably most localities furnish sufficient pollen and enough bright warm days to secure as much brood as the bees can cover and protect.

The bees of Italian blood require rather more encouragement than those of some other races in order to produce a big field force in time for an early flow. In this locality we usually secure the best results by wintering the bees in two-story hives. The upper story contains the old brood-nest, while the lower story is an extracting-super containing two to four combs partly full of honey, the remainder being empty combs.

The bees clustering in the upper story are well away from any direct drafts of cold air that may be driven into the entrance by cold winter or spring winds. During the fall, after the flow, the bees busy themselves on warm days, carrying up any unsealed honey into the combs above, where it is arranged to their liking, this activity favoring brood-rearing perhaps a little later than usual.

Then if several warm days come at any time during the winter or early spring, the bees uncap and carry up more honey, resulting in early brood-rearing. The chief benefit is in the spring, when brood-rearing is well under way and the honey in the lower body is constantly being carried above, where it may be better protected and used. If possible, it is very good practice to take heavy combs of honey from the brood-nest at this time, and put them below, giving the queen an abundance of room in empty combs in the upper story, and furnishing more honey, far from the cluster, when the bees will busy themselves again to carry it above, all of which activity promotes brood-rearing to the utmost.

So successful has been this practice that we have felt no need of any regular feeding save in rare cases, for this plan as given above promotes activity within the hive, and with but one or two manipulations of each colony it produces as large and productive colonies as we have ever seen produced by regular feeding, and with far less labor. Even in localities where, for various reasons, the beekeeper may prefer to winter in single bodies, the above practice may be made highly profitable in the spring by taking the combs of honey from the brood-nest and putting them into a body which is to be put below the regular brood-nest. In all cases it may be advisable, especially for the beginner, to contract the entrance, so that the bees may easily repel robbers.

The well-known disposition of the bees to rear their brood near the entrance while storing their honey in the more remote parts of the hive may perhaps explain the splendid results secured by this method of automatic stimulating, as the bees wish to move the honey to the more secure position. Perhaps those using a deep bottom-board like that of Dr. C. C. Miller may secure good results by taking a comb of honey from the brood-nest and laying it on a few sticks, in the deep space of the bottom-board; but the use of a hive-body is better, as several combs of honey may be taken from the brood-nest at one time and put below. The removal of most of the honey from the brood-nest gives the bees room for more brood in a single body, where it is more compact and easily cared for during cool nights, while it is not so soon necessary for the bees to begin rearing brood in another body, with the ever-present difficulty in crossing over into another body, over about 1½ inches of top-bar, bottom-bar, and bee-space.

Meridian, Idaho.

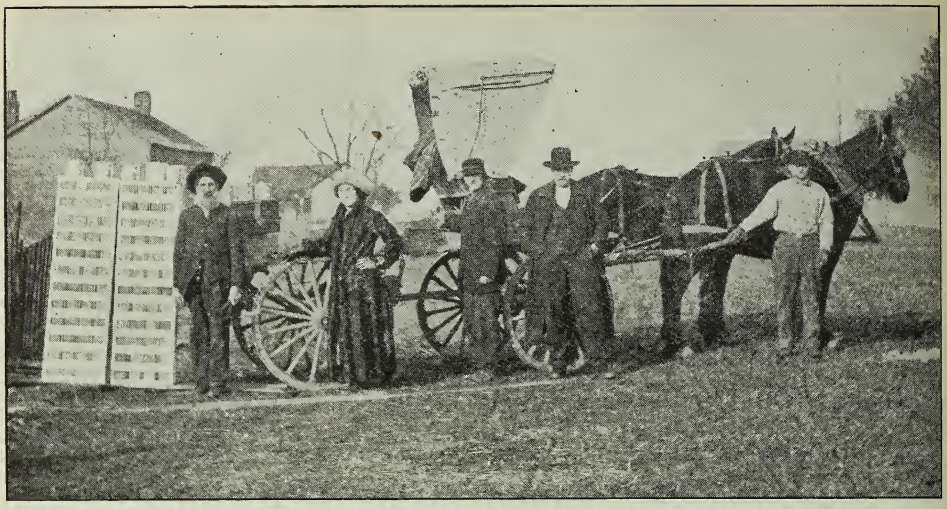
A BUSINESS POLICY IN THE APIARY

BY JOHN W. LOVE

Not long ago, in response to a request for settlement of an account, a beekeeper promised to pay part of his bill as soon as he disposed of some trees for the sale of which he was acting as agent.

Why should he have to wait until he had sold his trees before he paid his bills? Was his bee business so unprofitable that he had to sink into it the income from other lines of work? Or was he not allowing other lines of business to depend upon his bees not only for capital but for running expenses as well?

This is too commonly the situation with



650 lbs. of honey, W. E. Allen's December delivery. Mr. Allen, who stands beside the honey, secured 4350 lbs. from 75 colonies, spring count, increasing to 100. This was the largest yield recorded for the vicinity of New Haven, Ill. The buckets filled with comb honey accommodate travelers he meets on the road.

men who are engaged in the bee business along with other lines of work. They know they make a living, but cannot estimate the profit they receive from bees nor tell whether keeping bees pays them at all.

The farmer who has bees or the beekeeper who raises poultry should keep his accounts in such a manner that he will know whether his bees are making him a profit or a loss. If a loss, the business should be disposed of. If a profit, the business should be provided with what capital it needs, and an amount set aside for operating expenses and kept solely for the apiary.

There is this danger in engaging in two kinds of work, such as poultry-raising and beekeeping, that the owner may never learn that he is losing money in one of his lines. He may be sinking a dollar a day in his poultry, and making three a day from his bees, and conclude at the end of several years that both bees and poultry are unprofitable because neither, to his view, can make him a living by itself. On the other hand, had he known the situation he could have been deriving a comfortable living from a delightful pursuit.

A farmer gets seven cents a pound for his hogs. He thinks he is making a lot of money. Where did his feed come from? Oh! he raised that right on the farm. But raising it took labor. Now, labor costs, whether that of the farmer or the hired man. The same farmer will realize how foolish it is to maintain perambulatory corn-cribs and dispose of them for a fraction of what he has put into them. If he were raising hogs and nothing else, and either buying his feed or growing what he needed, he could easily tell just how much he is making out of the business, after deducting a fair price for his own labor.

The considerations are the same with practical apiculture. The beeman can as well afford to pour sugar syrup all winter into a lot of backlot buzzers without getting any honey as to throw it into the drain. After several years of the business, if he finds he is making nothing more than wages, he might better sell the outfit to some one else, and then hire out to him as an assistant. He would be relieving himself of a lot of worry, and have his investment free for something else.

But how is the beekeeper to know whether his bee-poultry or bee-fruit or bee-farming combination is profitable, or whether his bee business alone pays anything more than wages? He can determine this only by keeping a set of accounts for his bees alone. He must carefully record every expenditure for hives or supplies and every cent he receives from a sale. He should rate his own labor at, say, twenty cents an hour if he is an amateur, and more if an expert. Then at the end of the year he will be in a position to know just how his bee business stands.

After the expenditures and labor account are deducted, if the figures show a large profit he will be wise in increasing the number of his colonies and the extent of

his operations. The point at which to stop increasing will again be shown by his figures if he has kept his accounts carefully.

Such a set of books ought to show whether the beekeeper is making any return on the capital invested. Of course, where he has only one or two hundred dollars in bees and equipment, a normal profit on the investment would not be more than a week's wages, but still an accurate set of books ought to show it. Particularly where a man is keeping bees on his own land, he is liable to forget that there is due him besides his wages something which he can call rent. He would receive rent if he let some one else use it. So rent as well as labor and some return on the equipment ought to be looked for in the final balance.

Many a beekeeper never realizes he is not making money until he finds himself short of cash. He becomes disgusted, when perhaps at that very moment his profits are good. He is short simply because he has been running for increase or buying hives and machinery. On the other hand he may find himself with more cash than he ever had before, and pat himself on the back for his ability in the bee business. At the same time effective accounting would reveal that the outlay for new but necessary equipment will take more than he has on hand.

To go back to fundamentals, present-day competition in all lines is driving out the inefficient. The beeman with modern business methods will crowd on to the shelf his inefficient competitor. To keep his business from falling into the hands of the large commercial apiaries, the individual must be economical in his operations. Accounting is the soul of economy.

BLACKS VS. ITALIANS

BY W. C. MOLLETT

A few years ago I wrote something about the difference in the honey-gathering, hardiness, and other qualities of the common brown or black bees as compared with the Italians. On page 175 I note what the editor says as to the black races of bees, and also on page 181 I notice that Mr. Doolittle says that, as to gathering nectar from basswood and clover, he has never been able to see any difference between the two races.

Now, this is a subject to which I have given a great deal of attention without making a very definite conclusion. I still have both races, and so far I cannot rate the ordinary Italians much ahead, as a great many beekeepers do.

A short time ago Dr. Miller said he thought that not many beekeepers of the present time ever saw a case of "roping" or hanging down from the comb in a rope-like cluster. I have had the blacks do this time after time, and sometimes it is a great advantage, as the bees are very easily shaken from the comb. This is usually very difficult with the Italians.

When I began keeping bees I secured a very gentle strain of Italians which were highly recommended as honey-gatherers. After I increased them to about half a dozen colonies, I thought I was sure of a fair crop of honey; but imagine my surprise when they began to swarm about the first of May, and kept it up until the season for storing honey had passed. Of course I had not had enough experience then to know how to manage them to the best advantage, or I might have secured some honey, anyhow. Since then I have learned how to manage them better; but I still feel that I do not know all there is to be learned, since I sometimes meet with surprises.

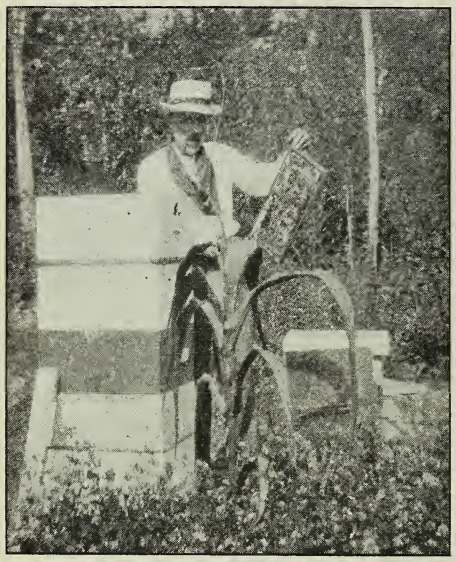
For the past five years I have had two apiaries about three miles apart—the one at home of Italians, the other of the common black variety, and so I have had a fair chance of comparing the two races. With Mr. Doolittle I find no practical difference in the honey-gathering of the two; but in other respects I find considerable difference between them. The blacks do not rear brood quite as early as the Italians, which is an advantage here, as the nectar flow is usually rather late. The blacks swarm later, and generally not until they have filled one super with honey, while the Italians will often swarm before they have worked in the supers at all. The blacks seem to economize their stores better in wintering, as I often have to feed the Italians, when the blacks, with exactly the same management, will winter without any feeding at all. As to the gentleness of the two it is a rather open question. Often I find colonies of almost pure Italians that are as cross as any bees could be. Smoking the blacks soon stops them from stinging, while I have found some Italians that were very hard to control with smoke. For color I prefer the Italians. Taking every thing into consideration I find that the Italians are often overrated. I can get just as much money from the blacks as from the Italians.

Stonecoal, W. V.

A BONANZA COLONY

BY R. J. T. MUCKLE

It may interest and encourage some beginner to see the photograph of a "Corner in Honey" in Manitoba, where "Our Lady of the Snows" is supposed to hold eternal court. The background is oak, poplar, wild plum, and nut-hazel; the foreground, Grim's alfalfa and popcorn. The whole takes me back to Honolulu of fifteen years ago.



A corner in honey.

On May 26, 1914, I received a nucleus and queen from an advertiser, and by feeding and the switching process I had, by July 27, not only tiered up as shown, but produced and sold at $11 each two strong swarms.

On Aug. 20 I extracted from the three center boxes 142 lbs. of a honey which our Ottawa authority, on testing a ten-pound sample, declared was the finest he had ever come across—that it was in a class of its own, and that we might put our own price on such an article. I then divided this immense colony into three heavy stocks. I fed ten pounds of sugar, made into thick syrup, to each, and, though strong for my years, being a "forty-niner" (not gold seeker but born in 1849), I found them a heavy lift to put in the cellar. They were in ten-frame hives, and weighed 76, 83, and 90 lbs. respectively.

For over 40 years an enthusiastic student of the grand cult, I have absorbed so much from various sources I cannot tell whether I learned that which I think I know from reading or experience.

Clandeboye, Manitoba.

SOME KINKS IN THE QUEEN BUSINESS

BY W. S. M'NAIR

The first queens I bought I ordered from a reliable firm, using an old price list. The price was six for $5. They sent me three queens and an invoice at the rate of $1.75 each. I wrote them to cancel the rest of the order, also sending a money order for the difference, 25 cts. In a week I got the three queens, according to the original order, and I had to pay $1.75 each for these also. When I sent the money for the last three queens I asked if they did not receive my letter canceling my order, to which I got no reply. Now this was very unbusinesslike. They should have canceled my order when requested.

I ordered three golden Italian queens from a man who advertises extensively. They were untested, which means (or is supposed to mean) mated queens not kept long enough to show if they are purely mated. I also bought eight more queens from this breeder, and successfully introduced nine of the total number. I have not got a colony of golden bees yet. I do not know whether or not these golden strains have become fixed in color yet; but I do know that I have some queens that were supposed to be leather-colored that are as yellow as these famous goldens. I have come to the conclusion that some queens sold as untested are tested and found mismated.

The breeder of these queens wrote me that the only danger of getting cross-bred queens was from an apiary of Carniolans not far from his queen-breeding yard. As a matter of fact, all my queens were crossed with three-banded, the queens being beautiful in color, yellow to the very tip. Their offspring varied from three-banded to golden, not more than 25 per cent of each hive being golden. In one or two of them the only golden bee was the queen.

These queens also were supposed to be

gentle and good honey-gatherers. As far as that was concerned they were fair; but of course I could not judge them, since I did not get a pure one. No one can judge a strain of bees unless he manages to get properly mated queens.

This is not the worst experience I have had in buying queens. So far I got queens in exchange for my money. One time I did not. In late July, 1913, I ordered a tested Carniolan queen, and sent a money order for $1.50. After waiting for some time I wrote and asked why I did not get the queen. As well as I can remember he said he did not have any tested, but could supply untested. I then told him to return my money. This was about November. After a week or so I received a check for one dollar on a small bank or at least a bank I never heard of before, in New Jersey. I felt pretty sore by this time over the transaction; and as I would have had to pay exchange or discount at any of our banks to have it cashed I returned the check to him and told him if he needed money bad enough to keep the 50 cts. he could also keep the dollar. I also suggested that he could send me the money in the form of an express-office order. But I suppose he needed the money, because I never heard from him again.

I am glad to say that, in my experimenting with different breeders, I have found one man who sells what he advertises. I have bought about eighteen queens from this breeder, and I could not praise his bees too highly. They are good from start to finish. The queens were all untested, and a large percentage (about fifteen out of eighteen) turned out purely mated. This is where I get all my queens in the future. It is a great thing to a man ordering through the mail to know where he can get what he pays for.

How large a number of classes queens are divided into! There are untested, selected untested, warranted, tested, selected tested, etc. It is getting to be like eggs in the grocery—strictly fresh, fresh, choice, new-laid, etc. I think this is all tommyrot.

You can't tell from the looks of a toad how far it will jump. You can tell very little about a queen until she gets started in a hive. I have seen queens that looked good which proved useless, and small-sized queens that had no beauty about them at all do good work.

To my mind there should be only three classes of queens—untested, tested, and breeders; and I believe when all is said that is all the classes there are.

Hamilton, Ontario.

WHICH IS THE PERSISTENT AND DOMINANT RACE?

BY WESLEY L. ROBERTS

I wonder if you fully realized all that is implied in the expression which you used in an editorial on page 175: "The fact that blacks seem to be the persistent and dominant race." I have studied bees by day, dreamed of them by night, and read both by night and by day. I read that the Italian bee is the bee to get, since they excel in a number of different ways. And so I have been going in for the Italian bee. I have also been led to believe, both by study and observation, that any race in its purity (speaking broadly) that excels in good qualities would be "the persistent and dominant race."

It would seem that the black or brown bee is "the persistent and dominant race" among bees. That is what you say. The proof is that all others, when left to themselves, revert to the dark type. Circumstantial evidence is added in the fact, admitted by all, that the so-called hybrids or cross-bred bees, after the first cross, show a breaking-up of all good qualities, lose their stamina, become constitutional weaklings, and, of course, become much more subject to disease than the pure bloods of any race.

Perhaps I have made a mistake in getting the Italian race of bees. Would it not have been better to send to Switzerland and get some of the black or brown race in their purity? The Helvetians probably have them more pure than in any other part of the earth.

Then because they are "the persistent and dominant race" in their purity they would possess much constitutional vigor, their stamina would not be broken by cross-breeding, and so they would have vigor to resist disease, the energy to gather an abundance of honey, and ability to defend it.

If I have made any mistake in getting the Italian race of bees I should like to know it as soon as possible. "The persistent and dominant race" is the race I want, because every thing in nature shows me that is where to look for improvement.

Lavalle, Wis., March 10.

[You are reading more than there is

expressed or implied in the quotation about blacks being the "persistent and dominant race." If you will read again our editorial on page 175 you will see that this "persistency" and "dominance" does not mean that these two characteristics comprise *all* the other desirable qualities in bees. And you will see, also, that we made an exception in the case of the leather-colored Italians. Note our last paragraph, second column.

The wild blackberry, for example, is "dominant" and "persistent," but these adjectives do not argue that it is the most desirable for the small-fruit grower who is engaged in the business of furnishing blackberries for the market. The cultivated varieties are vastly superior. Again, the scrub cattle of Mexico and the southern portions of the United States are, no doubt, a "persistent" and "dominant" breed of cattle; but it does not follow that in the matter of milk or beef this breed comes anywhere near the modern Jerseys or Holsteins. The point we tried to make was that black bees, for some localities, will breed up better and faster than some of the so-called yellow and extra-yellow Italians, and in some cases better than the regular leather-colored Italians; but that does not follow that the black bees of Virginia will be the equal of a strong and vigorous strain of Italians, either for honey production or resistance to disease for Virginia or elsewhere. As a matter of fact, blacks do not resist foul brood like the yellow bees.

The tendency of nature is to revert back to the original; but it does not follow, nor have the facts proven, that a pure strain of Italians where there are no blacks will in time degenerate to black bees. When we speak of black bees or brown bees it is proper to say that either Carniolans or Caucasians or Banats are their superior in almost every respect. In some cases they may be better than leather-colored Italians; but our experience, covering an extended observation and travel all over the United States, leads us to believe that the ordinary Italians that have not been run for color are superior to any other strain of bees, although an exception should be noted in certain localities. The fact that Italians have the preference on the part of about 90 per cent of all the beekeepers in this country would seem to indicate that even if they are not the "persistent" and "dominant" race of the world they are superior, from the standpoint of dollars and cents, and convenience and ease in handling; yet there are certain localities where we might prefer Carniolans or Caucasians; but these localities are very limited.—Ed.]

AN APIARY OF 250 COLONIES WINTERS SUCCESSFULLY ON ASTER HONEY

BY J. L. BYER

The first time I remember hearing of bad effects of aster honey was at the Denver convention some years ago, when the Manley Brothers, of Sandusky, Mich., stated that in their section the late honey always proved fatal to the bees, and as a result they did not try to winter the bees any more, preferring to take all the honey away and buy more bees next spring. Many of us thought it a wasteful plan, to say the least, and we all had our idea as to how *we* would do under like circumstances. The most popular plan advocated was to extract all the late honey from the brood-nests and then feed sugar syrup; but, like some other things advocated, it is easier sometimes to tell *how* to do a thing than to do it.

Since that time we had almost forgotten what we heard about aster honey, as in our locality we never had any of it. But last fall at the yard 100 miles north of Toronto we unexpectedly got a flow of this honey in September, and then again aster honey became a live topic. There were 250 colonies in the yard; and while clover had been a failure, during August we got a flow from thistles, willow-herb, etc., of about 50 pounds per colony. During August I sent up 2500 pounds of sugar, thinking that much or more would be needed as among the 250 colonies one hundred were in eight-frame L. hives, and, as all know, when running bees in hives as small as that for extracted honey, as a rule there will be light brood-nests in the fall when supers are taken off. Honey was taken off during the first week in September, and all supers stored in the sheds. About Sept. 10 the weather turned very warm, and the millions of small blue asters growing on the uplands, that we had hardly noticed, began to yield honey. For twelve days this hot weather continued, and honey came in quite freely. We saw at once that some of the strongest

The bees appeared lively and healthy in every way.

colonies in the eight-frame hives would have to be given room, and a single full-depth super was given to about 60 colonies.

Over 1000 pounds of honey of light color, light body, and rather indifferent flavor, was extracted, while of course all the other colonies without supers—nearly 200 of them, simply jammed the brood-nests solid. We had aster honey for once—no doubt about it—and now it was high time to put into practice some of the suggestions we had so freely offered Manley Brothers at Detroit. But (let me emphasize the word) when we looked at that big yard with solid combs, the weather chilly most of the time, and bees quite stupid, the idea of tearing out all those combs from the brood-nests did not look a bit fascinating; in fact, it was almost an impossibility, all things considered, and I began to see why bees were left alone with late stores, even if they stood a good chance of dying before spring. They managed to feed 700 pounds of sugar to the 100 eight-frame Langstroth hives, but no more would they take, even when inverted pails were left over them for two days. The other 150 colonies had much deeper frames, and feeding was not to be thought of. So, after all we had said on the question previously, the bees were left to winter on aster honey, and in a locality where the mercury often crawls to 30 below zero F., and once in a while to 40°.

During the past winter, reports from aster honey as a winter food gave us but little comfort; and during all the season, including this spring, I have seen only an isolated case or two where success was reported, and then the bees had flights in February. We are all familiar how the bees of the Root Co. acted. Although wintering in a model cellar, they had to be carried out for a midwinter flight. So good an authority from so far south as West Virginia, Mr. L. H. Robey, wrote me that they often have trouble with aster honey. It sours in the hive, and if the bees are confined very long it is sure to cause dysentery. He said he felt quite sure that, if his bees had no flights from late November till February, they would die if wintering on this honey. As we have some of Mr. Robey's bees at this yard, of course his experience did not encourage us very much.

The bees at the yard in question had no flight after the last week in October. December was the severest on record—much the coldest month of the winter. The nearest tested thermometer registered 42° below on Christmas day; but at that time the hives were pretty well buried with snow. As March came in, a day warm enough for bees to fly was patiently waited for; and as the month began to draw to a close without such a day, I am afraid that I began to be a bit impatient sometimes. Our bees in

About a foot of snow lay under the trees.

York County had several partial flights during the bright days of March; but the temperature rarely got much above the freezing-point in the shade, although the month as a whole was delightful. A good friend in Orillia, Mr. Bruce Murphy, a manufacturing jeweler who keeps a few bees as a side issue, very kindly wrote me frequently as to the weather up there; and as he is only fifteen miles from our bees I felt sure that his local conditions would be similar to what they would be at our apiary.

To make a long story short, the bees up there had no flight until April 7, when the weather turned warm. On the next day I took the train and went up to see how bad the wreck was. The bees had been closely confined for over five months. Arriving at the destination about 1 P. M., and getting a key at a neighbor's, I started to walk through the bush south of the apiary. About a foot of snow was still among the trees, as can be seen in the distance at the left-hand corner of one of the pictures. The day was warm—fully 60 in the shade; and as I heard the roar of bees I knew they were not *all* dead, anyway. As I approached the yard I squinted through the trees when within sight of the apiary, expecting to see the smeary marks of dysentery around entrances of the cases. As I got a bit closer, sure enough there were dark colors there all right; but as I got closer still, I saw that the coloring was bees, which seemed to lie by the hundreds around every entrance. I soon found that they were robbing out two colonies that had died from queenlessness, and of course the bees were guarding their entrances. But I assure you that, after not seeing the bees for so long, the tremendous roar of the thousands of bees in the air was the sweetest music I had heard for some time.

A rapid but by no means thorough examination that afternoon and the next forenoon revealed the following facts: Not a spot of dysentery in the whole apiary, the bees appeared lively and healthy in every way. Out of the 250, probably ten or twelve were dead. I suspect all had been queenless last fall, as the few I looked into had no bees, and had solid combs of honey. Roughly speaking, 200 appeared to be strong while about forty were weak. A lot of swarming in August, no doubt, left some weak colonies last fall; and during the flow in September there was little brood, and field bees would be worn out. That would mean weaker colonies than under ordinary conditions. Bees were heavy with stores, and they seemed to have used little for wintering. Stores were in excellent condition; and in the queenless colonies mentioned, some unsealed aster honey was at the bottom of combs, thin and watery, but not fermented. Of course I was gratified; and while too early to whistle very

much, it seems certain that aster honey in this case was not bad for wintering. The honey was gathered during very warm weather, and bees were packed early in October. That may have helped.

Is there a possibility that different kinds of aster vary in the matter of quality of honey? Although much of the larger kind with blue blossoms, growing in low lands, was present, yet no bees touched them. They swarmed on the smaller blue variety growing on the uplands. I don't know why such difference between here and Ohio and other places. Can any one enlighten us?

BEE VALUES AND SOME QUESTIONS

BY FRED E. WHITE

I have been asked "What is the value of a hive of bees?" so frequently that it has become desirable to have a ready answer; and to that end I have been figuring as follows: Local values are—bees, $3.00 to $5.00 (swarms or in boxes); ten-frame L. hive with full sheets of foundation, $4.20 (medium brood, 12½ cents per sheet).

This combination might prove satisfactory for the summer months, and so might the price ($8.50 roughly); but what about early spring when folks generally feel the lure of the land, and are searching for "ways and means"?

At this time, as I understand it, a hive must be complete, and that would mean adding to the above figure the value of the drawn comb, which would be about $5.00 extra, and the price of the 35 or 40 lbs. of honey left in the hive for winter feed, say $6.00 (honey retails here at 17½ to 20 cts. per lb.).

There is yet another item that should be recorded; viz., the winter losses. These should be averaged, and the results added. These figures bring the total up to about $20.00.

I do not think one would make many sales at this price, as the old box hive at $5.00 looks more attractive.

1. Wherein can these figures be reduced?

2. How early in spring can bees be satisfactorily transferred to foundation?

3. If swarming is discouraged and dividing practiced, can one sell bees in early spring without combs?

4. What does your experience in selling bees by weight suggest in this connection?

5. What is the accepted value of a frame of Langstroth worker comb?

6. Is a honey-flow necessary to make bees draw out foundation?

Bees at $5.00 in the spring and winter, feed at $6.00, as above, does not look like good business, especially in view of possible winter losses; but, unfortunately(?) bees are not to be had in large quantities here, and so it would not pay to destroy them in the fall and sell the honey. Perhaps the better way would be to winter them on sugar syrup.

North Vancouver, B. C.

[2, 6. It is almost impossible to give a definite time, owing to changeable weather. Usually not until fairly settled warm weather can be expected. If the bees are fed syrup a honey-flow is not a necessity.

3, 4. Selling bees by the pound before June 1 is a pretty expensive proposition, as we know by experience.

1, 5. It seems to us that most of your figures are pretty high. In the spring there would not be 30 to 40 pounds of honey in the combs, ordinarily. Again, it is possible to buy drawn combs, frames and all, for 25 to 35 cts. apiece. If $3.00, say, were added, the cost of the frames and full sheets of foundation should be deducted from the cost of the hive in the first place.—Ed.]

COST OF RUNNING AN AUTOMOBILE

BY HARRIS T. KILLE

According to the experience of U. T. Cox, given in the March 6th issue of the *Rural New-Yorker*, the editor's estimate of 10 cents a mile as the cost of running an auto truck is none too high. Mr. Cox used an auto truck with a rated capacity of 1500 lbs. He lived seven miles from market, and used it for hauling fruit. Concerning the cost he writes as follows: "The truck cost $750, and has made about 750 trips or more the past three years. It is about worn out, though it would have lasted much longer with better care, and had been used on good roads, so it has cost about $1.00 per load in wear and tear of the machine, and operating expenses and repairs in that time cost about 75 cents more, or $1.75 per round trip." The round trip in this case was 14

miles, so the running expenses were 12½ cents per mile.

Twelve and a half or even ten cents a mile may look appalling to the average beekeeper, simply because he has never figured the cost of keeping a horse. Even if it were true that the mileage cost of traveling or hauling by auto truck exceeded many times that of doing the same work with horse power, it does not necessarily prove that the horse is the more economical means of transportation for the beekeeper. Time is money, and no one will deny the fact that the auto saves time. Mr. Cox was able to save at least three hours a trip in hauling his fruit to market. If we value his time at 25 cents an hour (and if he is much of a farmer he will be insulted at such a low valuation) he saved 75 cents' worth of time a trip—enough to pay operating expenses and repairs.

Beekeepers seem to be either disinclined or unable to get hired help. The time that the apiarist can expend among the bees largely determines the size of his income. So the profit of an automobile should be estimated from the extra hours it will enable the beekeeper to be among the bees doing profitable work.

I should like to see the cost of running autos discussed further in the columns of GLEANINGS. I think Mr. A. W. Smith, pages 122-123, Feb. 1, was rather fortunate in getting an extra good car at an extremely low price. The average beekeeper may not be able to duplicate his results. I wish he had told how he fixed his Ford so that he could carry loads of hives, and how heavy loads he was able to take safely at a trip. May we not have more articles and photos dealing with the auto for the beekeeper? Let us have original cost, period of usefulness, cost of running, method of building carrying body, time saved, etc.

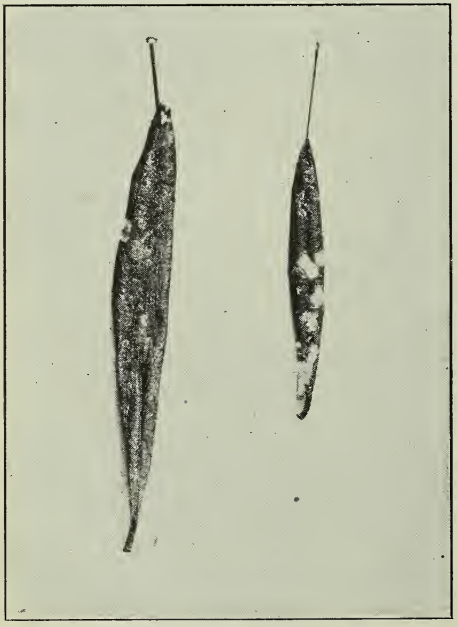
The auto is, I believe, destined more than any thing else to make beekeeping an industry for the specialist. Surely it will enable us to follow Hutchinson's advice to "keep more bees."

Swedesboro, N. J.

A GRANULATED DEPOSIT OF HONEY-DEW

BY ALVIN L. HEIM

Honey-dew is deposited on olive leaves by the black scale, which causes fruit and branches to grow sticky when it is warm.



Crystallized honey-dew on olive leaves.

I think the granulation of the honey-dew was caused by a rain some time ago. The deposits dissolved, and the consequent evaporation of the waterdrops left the deposit as shown. The bees worked on it during the early summer last year, but not much after the blue curl began yielding nectar.

The honey crop in the alfalfa and carpet-grass regions of this state last year was very poor, and the market in honey is even poorer. The outlook is "blue."

Fairoaks, Cal.

The Irresistible Call

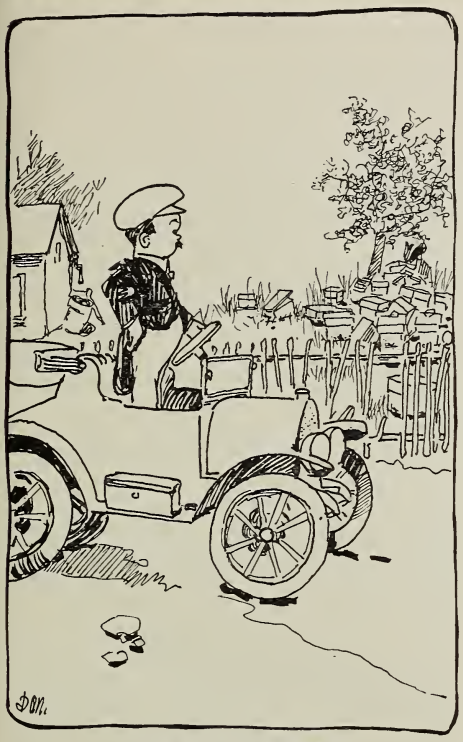
BY GRACE ALLEN

The year with his ancient enticings
Is tempting the summer to come;
The trees are in leaf and the lilac in bloom,
And the bees are beginning to hum.

Spring's daffodils down in the corner
In tarnished gold wither and waste,
And the purple-blue iris is flaunting her flag
To signal the summer to haste.

She might have resisted the blossoms
Or singing of birds in the trees,
But she'll come—oh! she'll come on a wind from the south
When she hears the old hum of the bees!

Heads of Grain from Different Fields



The Backlot Buzzer

You don't have to get very close to a beeyard to tell whether the fellow who owns it is interested in it or baseball.

Aster Honey—Its Quality and Color

Can you give me some reliable information regarding aster honey? I wish to know of the color and quality. I read an article by a correspondent of GLEANINGS some time ago in which aster honey is described as light in color. Dr. Phillips questions this statement, and I had always believed that aster is a dark honey, though we get none here except such as is mixed with other honeys.

As you handle so much honey from so many different localities I thought that you might have seen samples sufficiently pure to enable you to inform me in regard to this particular point.

Atlantic, Iowa. FRANK C. PELLETT.

[The name "aster," when referring to a certain honey, covers a multitude of sins. There are some aster honeys that are comparatively light in color, and not bad in flavor; but most of the asters that we have tasted and marked as such are on the light-amber order, and lacking body. Some would call the flavors comparatively good, while others would call them poor. Any one who has been educated to the use of clover honey, alfalfa, or mountain sage, would call the aster flavor poor; but others who have been educated to eat aster honey might call it of good quality. For example, a great many people who live in New York like the buckwheat flavor because they have been brought up to eat it from childhood. But most people outside of that state would prefer almost any other flavor to buckwheat.

To answer your question more explicitly, we may say that the general markets do not class aster as a table honey. While it would hardly rank in flavor with most of the amber honeys, it is lighter in color than the average of the ambers.—ED.]

Why Aster Honey Makes Trouble Sometimes and Not Others

It is noteworthy that most of those beekeepers who report bad results from using aster honey as a winter food place their hives in cellars; while those who have found it without objection winter largely outdoors. From this it is clear that aster honey under proper conditions must be wholesome and harmless, since if it were deleterious in itself there would be uniformly bad results.

Aster honey is open to two objections. First, it crystallizes quickly, and at times in such a hard form that it is partially unavailable. Thus occasionally bees may starve with an abundance of candied aster honey in the hive. Second, aster honey is gathered so late that winter may begin before it has been properly ripened and sealed. If the hives have been placed in a warm damp cellar th honey may easily deteriorate or spoil, producing dysentery among the bees; but probably any other honey stored equally late, and not fully ripened. would do the same. There has not yet been a particle of evidence offered to show that the chemical constituents of aster honey are in any way injurious to bees or human beings. On the contrary, it is an excellent table honey, and hundreds of colonies of bees have wintered on it with very small loss. No doubt it is often blamed for failures that are due to other causes which the beekeeper has failed to perceive. JOHN H. LOVELL.

Waldoboro, Maine.

What is Squash Honey?

Mr. Newell, page 647, Aug. 15, 1914, under the heading "Squash Honey," says of my communication on page 433, June 1, "If you can believe your botany all alders bloom in spring. To controvert this assertion I may be pardoned for mentioning what I find in Prof. Gray's School Botany, as many readers of GLEANINGS do not possess a botanical work, nor understand that common names of plants are not distinctive. He chooses to use the common name that would be misleading to some.

Gray's Botany, page 217, Sec. 19: *Clethera,* white alder (old Greek name of *Alder,* from some resemblance in the foliage). Flowers in summer. *C. alnifolia,* the only common species, in low ground three to ten feet high, with wedge-obovate sharply serrate, straight-veined leaves, and upright panicled racemes of fragrant small flowers."

Mr. Newell also says: "Our fall honey all comes from squash-blossoms." For many years my bees have collected quite a lot of goldenrod honey, depending on conditions of weather.

Further on he says, "If you know anything about squashes you know the blossom is open only one day." Having made a specialty of melons until I was 67 years old, I know that squashes and cucumbers have the pistillate and staminate in distinct blossoms, the staminate appearing some time before the pistillate, and very much more numerous, and holding more than one day, while the pistillate will close very soon after it is fertilized; but if not fertilized it may hold for more than one day; but as the bees are always numerous on them they are very likely to be fertilized the first day.

Bees work on many flowers which give only pollen; and in my opinion that is why they work squash and cucumbers. Dr. Miller has said in some of his

writings that there was a pickle-factory at Marengo, and an extensive field of cucumbers, but he did not know what cucumber honey is.

Until fourteen years ago, in the neighborhood where I lived melons were cultivated extensively for the Lowell and Nashua market, and I always had bees. Yet I don't know what melon honey is. I think it is principally pollen that the bees get out of their blossoms.

Woburn, Mass. JOHN P. COBURN.

[We believe our correspondent is in error in believing that bees do not get nectar from squash-blossoms. See A B C and Z Y Z of Bee Culture, page 360. "Nectar abundant in a little reservoir at the bottom of the flower."—ED.]

Making Increase with a Pound of Bees and a Strong Colony

With one strong colony of hybrids in one hive and half a pound of Italians, with breeding queen, in another, how would you proceed to get the greatest possible increase in one season? WISCONSIN.

[In the first place we would draw a frame of hatching brood from the strong colony, giving it a slight shake to jar off the old bees. The young bees will cling to the frame. Give this to the pound of bees. As soon as the brood has hatched, or the larger part of it at least, give another frame of hatching brood as before. Give it a slight shake before doing so. Continue thus to draw on the strong colony till both are of about equal strength. From that time on, increase can be secured by any of the well-recognized methods given in the text-books. Queens should be reared from the breeding queen; and as fast as the nuclei are made they should be given a cell or a virgin queen from the breeder.

At the very beginning of things all drone brood in the hybrid colony should be uncapped and beheaded, and a drone-trap attached to the entrance to catch the flying drones.

As soon as it is practicable, a cell or a virgin from the breeder should be given to the hybrid. After increase is well under way, give the breeding queen to a nucleus. It is always desirable to keep a breeder down so she will not exhaust herself by continual egg-laying. If she is kept in a nucleus of one or two frames she will furnish all the eggs for grafting or cell-building that will be required.—ED.]

Some Questions on Queen Introduction

I am having considerable trouble getting the bees to stay in twin mating boxes. I have set out so far about 100 boxes, giving each a feeder of thick honey, a day-old virgin, and a pint dipper of bees. The bees seem to drift or abscond from some of them by degrees.

In thinking the matter over, it seems to me that my mistake must be in using too young a virgin without any brood. At any rate I shall give the next bunch about a five-day-old virgin, as an experiment. I do not see how bees can be made to stay on dry comb for ten days. Please advise if this is my mistake.

How old can a virgin be before introduction is made, and still be reasonably sure of mating?

In this country every thing has to be protected from heat, and I have set the boxes out under shade-trees, four on a stand.

We still have 200 of these boxes, or 400 nuclei, to set out, and you will realize that, bees and all, it is quite an investment.

How old should a virgin be for smoke introduction? I used three-day-olds last fall, and very little smoke, but find a lot of drone-layers this spring. This locality is extremely peculiar in that virgins seem to remain soft, pale, and distended between two and four days after hatching on account of heat, and are a very bright yellow after mating, and until shipped elsewhere, when they assume natural shade.

I do not believe it safe to introduce by smoke here with the queen less than five days old—may be not at all when it gets hot. It averages 105 to 110 in the shade here during July and August.

Overton, Nev., April 2. T. W. RIGGS.

[Mr. Mell Pritchard, our queen-breeder, replies:]

We prepare our boxes by opening the ventilators and closing the entrances, filling the feeders with very thick sugar syrup, and putting in one dry drawn frame on each side. We next drop in a virgin, and pour in about ¼ lb. of wet bees on each side; close up the covers, and set the boxes in a cool shady place, leaving them there until late in the afternoon of the following day, when they are placed on the stands, and are released before sunrise the next morning. By this time the feed has all been taken out of the feeder and put in the one frame. After the bees have had a fly and settled down we put in the other frame on the side next to the division-board. The queen will lay in this frame, and the brood is the warmest part of the box. We prefer virgins about two days old; but virgins introduced at four days old probably make just as good queens. We would not use them much older than that.

Our boxes are on individual stands, in rows 15 feet apart each way. We have tried putting them closer, but find too many queens are lost at mating time. Our boxes are in the shade. With a temperature of 100 the frames would surely melt down if they were not shaded.

Transferring Made Easy

In transferring from box hives I simply made a frame out of half-inch stuff which would cover a ten-frame hive-body. This frame had a square hole in the center, about 8 x 12 inches. I laid this over the new hive, then took off the bottom of the old box containing the bees, and set the box (bees and all) over the new hive. After stopping the entrances to the old box I pried off the lid or cover, and with a little smoke drove most of the bees off from the combs into the new hive. Starting on one side I began cutting out the old combs. When I came to the brood I filled two or three frames with this, and put it in the new hive.

I transferred ten hives of them in February in this way, and about the 10th of March I had to put on supers, having saved every one of the queens. They went right to work in their new quarters.

This method, I find, saves most of the muss one makes by the old way as described in the A B C and X Y Z. Besides, there are practically no bees flying about to bother. What little honey there is dripping around is in the new hive. They soon clean this up and store it in their own hive.

Willowbrook, Cal. F. E. DUTCHER.

Two Queens Wintered in the Same Hive

I have a queen I purchased two years ago. Last summer the bees seemed to want to start cells to supersede her. I let one of the cells hatch out with her. Last fall I found the young queen laying, and the old mother queen, which was clipped, on the same comb to-day. I opened the hive and found both queens, the old queen laying, but the young one on the outside comb in perfect condition, but not laying. She is a nice large queen, larger-looking than the mother. I never knew two queens to winter in one hive loose together this way before. I am very sure the young queen was laying last fall, and am sure the old queen is laying now.

East Dennis, Mass. O. F. SNOW.

A. I. Root

OUR HOMES

Editor

Trust in the Lord, and do good; so shalt thou dwell in the land, and verily thou shalt be fed.—PSALM 37:3.

I have been young, and now am old; yet have I not seen the righteous forsaken, nor his seed begging bread.—PSALM 37:25.

When any one comes to me for advice, especially when any boy or girl wants the benefit of my experience in times past, as a rule I am ready to respond at once; but below is a letter received some two months ago. In this case I have delayed answering because I wanted to consider the matter well, and possibly get some light from some of the various periodicals which it is my pleasure to review more or less every day of my life. Besides, I have been praying that God would give me wisdom and understanding as I consider our young friend's troubles. Here is the letter:

Mr. Root:—I am a boy eighteen years old, belonging to a family of ten. All but one are younger than myself. Mr. H. H. Kolloster, who is a neighbor to us, called my attention to an article in your journal in which you make answer to letters he has written you. He informed my father and myself that he had used our case as an illustration of the unemployed. It has been some two years since I first met Mr. Kolloster. As he seemed quite intelligent in his talk I decided he could give me the information desired. At that time I had a great desire to join the army, as the Government advertised they would teach the soldier a trade, and that was just what I wanted. So I asked him how I could join the army and become a soldier. Imagine my surprise when he asked me what foreign working man had offended me that I should want to kill him. I explained I had no desire to kill any one. I wanted to learn a trade, and in this way I could do so. Again he said, "Find me a soldier who returned from the army who had learned a trade there, other than *murder*. Go home and take your Bible and read, 'Thou shalt not kill.' God meant that when he said it; and when you become a soldier you are given a rifle, a sword, and revolver, and you are taught how to use them, and you kill people whom you never saw and who never harmed you, just because somebody who is your boss tells you to; and the more you kill, the bigger hero you are. A battle-ship is a very large machine. It takes from seven hundred to one thousand men to run it, and its use is for no other purpose than to murder people; therefore it is a murdering-machine, the best that man can make."

Mr. Root, your sour-faced friend changed my mind. Was he right? I joined the Boy Scouts then, and later informed my friend that I had chosen something better than the army. He pleasantly drew a word picture connecting the boy scouts with the army, and my peace of mind was again disturbed. I disbelieved him, but the picture he drew was so forceful that I dropped the boy scouts. Now, Mr. Root, would you have advised me as he did?

I was born in Belgium. My poor old grandfather was stripped of every thing he had in this world, and was forced from his own native land into a foreign country, and other relatives missing, there to accept charity. The picture my native country presents to me causes me to think of soldiers and murders, and the boy scouts are found there as soldiers.

Here is one problem Mr. Kolloster has never been able to solve for me, and it is the sole object of this letter. I am eager to learn a trade. How can I do it? If you can solve this problem for me you can do me a world of good. I am quick and easy to learn, and ambitious, orderly, and obedient. Here is my problem: Two years ago, on account of sickness in our family, it fell to me to support this family of ten on $1.25 a day of 12 to 13 hours. At the end of eighteen months, with my father barely strong enough to be around, I was informed by my doctor that if I did not quit work at the mills I could not last long. After doctoring a month I worked for Mr. Kolloster for two months, building houses. He has not had a contract since, and I have not been able to get more than a day or two of work at a time, and the family is supported by the children who are able to do a little each week to help catch the nickels. I am just now filling the only place offered, that of messenger boy at ten dollars a month, and board myself. When you solve this problem, please send it to me. I would inclose a stamp, but you see what chance I have of getting it. Our streets are full of men out of work.

I will give you some points that Mr. Kolloster has taught me since I have known him. He says that under socialism all children would be educated, and learn the trade they would like to learn until they are twenty-one years of age, at the expense of the whole people, text-books and board included. Don't you think that would be all right? He says that after twenty-one years all men and women would be paid by the whole people the full value of the product of their toil less the expense of running the industry, and every man and woman guaranteed a job. Is that wrong? He says all the things publicly used would be publicly owned, and why not? He says there would be no profit and no interest, and he that won't work shall not eat.

Palatka, Fla., Feb. 14. JOHN GIBBON.

My good friend, I am glad to know that your neighbor asked you to turn to your *Bible;* but I regret that he did not at the same time ask you to present your troubles to the good pastor of your church. I take it that you go to Sunday-school and Endeavor society.* I greatly fear, however, that you do not. I would also advise you to talk with the superintendent of the Sunday-school. He certainly should be able to give you *some* needed advice. Your letter has done me good, because it has set me to thinking, and to talking with good and wise people. Perhaps I have been in times past a little bit too vehemet in denouncing war and warlike instruments. You may, perhaps, be aware that there are some religious denominations that call themselves "Non-resistants." They will not go to war nor will they go to law. I knew quite intimate-

* A judge in Brooklyn (one of Frank L. Brown's old Sunday-school boys, by the way) says he has sentenced over twenty-six thousand juvenile criminals; but among them all was not a single Sunday-school boy or girl.—*Sunday School Times.*

ly one such old gentleman who was a beekeeper. This beekeeping friend had a lovely daughter. A bright-looking chap, an entire stranger, got his eye on the girl and made love to her. Her father remonstrated; but as he was a non-resistant he did not make any great fuss over the matter. This slick young chap deliberately ruined the girl and left her. The father would do nothing, because he did not *believe in going to law.* Her own brother told me that his father, on account of his foolish religious principles, let this young reprobate go off "scot free," to ruin some other girl in the same way.

My young friend, you cannot remember, but I can, when John Morgan's band of guerillas invaded Ohio. They crossed the Ohio River, ransacked the stores, and robbed the banks; and they would have kept on going all over Ohio had there not been some men (and boys) who knew how to shoot. Had you and your good neighbor whom you have quoted been present in such an event, would you have permitted those guerillas to go on with their work simply because the Bible says, "Thou shalt not kill"? Suppose all of our great cities were to be suddenly deprived of policemen, or, let us say, the policemen to be deprived of their revolvers and other implements of warfare, what would be the result? In the city of Cleveland, murders, holdups, etc., are so common that petitions are being circulated to double the number of police. Occasionally a pickpocket, burglar, or highway robber overmasters a policeman. Every little while we read of one who loses his life in a righteous attempt to preserve peace. We hope and pray that *rebellion* will never break out again in the United States. But suppose it does; and suppose some foreign nation should discover some vulnerable point in our borders in some poorly protected point, and a call for soldiers were made to protect "our native land," what would *you* do? Washington has been reverenced and held up as the father of this country, and as a model man ever since he died, and yet *he* was a fighting man.

Now a word about our military schools. A young friend of mine—yes, quite a near relative—lost both father and mother away off in California. I feel sure he will excuse me, under the circumstances, if I mention that he had contracted some bad habits. He was inclined to be unruly; and as he did not seem to get along very well he took a sudden notion that he would enlist. He got a situation on a battle-ship. Now, it was one of my happy surprises to see that the boy has been straightened out and literally "made over" in the course of two or three years. He had good sense enough, thank God, to realize the importance of *obeying orders* when those orders came from Uncle Sam. In a short time he was promoted for good behavior. Just a few days ago he wrote me that he would give almost any thing in the world to have me hear a good minister, with whom he was acquainted, preach. I might give an extract from that letter that caused me to thank God, but I sent it to the good pastor to encourage him in his faithful ministry. Among other things, this relative wrote me that, when the men on board his ship touched the shore, they seemed to think that they were for the time being free from restraint, and a good many of them returned under the influence of drink. At the time of his promotion he was particularly commended because, no matter how long a leave of absence he had, he always returned clean and sober. With such a man as Daniels at the head of the navy we have a different state of affairs from what there was in former times.

Now, my good friend, here is another phase of the matter: You and your neighbor seem to think that you are "handicapped." What you are compelled to pass through is not particularly different from what thousands of other boys, and especially young boys, have passed through, who have in the end "made good." Our great men in all walks of life started out under straitened circumstances, as a rule—if any thing, much *worse* than yours. But they did not sit down nor give up and lament over their "misfortune." That you may know that there are good people who are considering this very question of a military education, I give below a letter from a good woman in much the same line.

Mr. Root:—Will you kindly give in your paper a reply to a question which has troubled me, and no doubt others, for a long time? But before I put the question I want to say that your highly valued paper has been in my mother's home for a number of years, and is considered to be the best periodical which enters the home because of its Christian character and sterling worth. Being a frequent visitor at home I have derived much good from the perusal of your articles, and so in a way I feel myself a member of your great family of readers, and believe you will consider me so.

Now as to the question. We read your article about toys, guns, firearms, etc., and we should like to ask why it is that, if America is such a *peace-loving* nation, it permits and encourages its young men to become so familiar with military practices and guns as it does in the A. and M. Colleges all over our land? Why will it not allow a young man to study agriculture without also forcing him to take a military training for five years, as is the custom here in Oklahoma, any way? This means much to me. I have an *only* son who has attended the A. and M. College at Stillwater for three years;

and as a *peace*-loving citizen I have often been troubled about the encouragement given to war.

Last year, when there seemed to be a likelihood of war with Mexico, a number of names of young men likely to be good soldiers was sent in to Washington by the commandant. I am almost certain my son's name was sent along, as they had advanced him rapidly. In consequence I have some objections to his returning to the A. and M., and yet I am anxious for my son to get a practical agricultural training. It is true the discipline in a way is good for the students; but could not that be secured in some other way?

I am sure there are others as vitally interested in the study of this question as myself, and for their sakes, as well as my own, would be pleased to get your view on this matter.

MRS. ROBT. BROEGELMANN.

Ringwood, Okla., Nov. 23.

Since reading the above letter, another incident occurs to me. Just a few days ago a business man in some city became suddenly insane. He shot, or shot at, everybody in sight in the office, then rushed out into the street and began to kill people right and left. Before a policeman could be found who was a practiced marksman this man had maimed or killed toward a dozen persons; and nobody knows how many more would have been killed or maimed had not a quick bullet from the expert policeman wound up his career. While it is not at all necessary that every young man should become expert in the use of firearms, at the present stage of the world's history it is exceedingly important that at least a few persons in a community should know how to save human life and perhaps protect property.

Now last, but by no means least, I have some good news for the young friend who writes the above letter, and for every other bright young boy in the whole wide world. I want to introduce you to the "champion corn boy of the United States;" and I do it by making a clipping from that excellent home journal, the *Ohio Farmer,* of April 19.

CHAMPION CORN BOY OF THE UNITED STATES.

Did you ever hear of Walker Lee Dunson? Well, he is the boy who astonished the world in 1913 by raising 232.5 bushels of shelled corn on an acre of ground. The total cost of this enormouus yield of corn was only $46.40, or a total of 19 cents a bushel. This was not the first time Dunson has won the prize for the largrest yield of corn in the state where he lives, for in 1912 he grew 172 bushels at a total cost of $35. As if to prove that it was not a matter of chance that he won twice, he again won the highest yield for his state in 1914, making the third time he has carried off the high honors and also making the highest official yield of any boy in the United States.

In January I went to Alexander City, Alabama, and inquired where Dunson lived. It was ten and a half miles out in the country over muddy roads. On the way to this farm I noticed that the land was very stony; the hills were steep, and covered with jack pines, scrub oak, broom sedge, and deep erosions. From appearance it was the last place on earth one would look for a champion crop yield of the United States. After arriving at the farm I found Walker Dunson a very much younger boy than my fancy had pictured. He was 15 years old the 4th of last December, so that will make him eligible for several more corn-growing contests. The average yield of corn in Alabama is only 17 bushels, yet the 3358 boys in the corn-growing contest made an average yield of 48.3 bushels per acre, which beat the other corn-growers by 31.3 bushels an acre.

The corn grown by the boys was made at an average cost of 26 cents a bushel, while that of the average farmer cost 70 cents. The location of the field where this high yield of corn was grown was very interesting to me. It is located in the valley between two very steep hills, and the dew settles in the valley and furnishes considerable extra moisture to the corn crop in the dry summer weather. This was the only special advantage of the location except that the valley is naturally somewhat richer than the upland. The soil was a sandy clay loam with more sand than clay. There was a splendid stream of water in the valley, and Dunson had intended to water his corn with a gas-engine and hose, but was prevented by the Department of Agriculture, as they ruled this an unequal advantage. No exception was taken, however, to the unusual amount of commercial fertilizer that was used. This field had 2300 lbs. of a 10-4-4 fertilizer but no barnyard manure.

After asking Dunson for his picture I was surprised to learn that a camera had never been to visit his place. Then I sent a telegram to Chicago and had an expert photographer start immediately for his place, and the pictures in this issue are the result. For the last two years one of the railroads has offered a fine four-year-old registered Percheron mare for the highest yield of crops on what is known as the four-crop contest. Mr. Dunson won these fine Percheron mares both years. His four crops made the following: 175 bushels of corn, 1623 pounds of cotton, 1974 pounds of peavine hay, and 3354 pounds of oats in straw. The total profit from these crops was $212.67, with an average profit of $53.17 to each crop. As Dunson had only three acres under cultivation he made an average profit of $70.85 an acre.

In addition to the horses, Walker Dunson has won a $250 scholarship to the State Agricultural College. He has also had a trip to his state fair and the national capitol at Washington, and cash prize of $50 besides. Perhaps the most interesting part of it all is that he has made the following records in the last three years: In 1912 a yield of 172 bushels of corn at a cost of $26, or 15 cents a bushel; in 1913 he made 232.5 bushels at a cost of $46.40, or 19 cents a bushel; in 1914 he made a yield of 175.5 bushels at a total cost of $35, or 20 cents a bushel. He has made a grand total of 579.75 bushels of corn in the last three years, winning every year, with a total cost of $107.40, and leaving him a total profit of $471.85 from the corn alone at the market price. The average cost of growing this corn was 18 cents a bushel. However, Dunson really made more than this from his corn, as most of it was sold for seed at $2.50 and $3.50 a bushel instead of selling at the market price.

Dunson cultivated his corn ten times last year. This was done every ten days unless there was a heavy rain, and then it was cultivated as soon as he could get on the field to work. He says he will not rest on his laurels, but intends to enter the contest again.

He plants the Marlboro Prolific corn, and has his seed all saved in good shape from stalks that have three and four ears on the stalks. His corn was drilled with one stalk standing every 12 inches as nearly as possible, and with rows three feet apart. Walker Dunson says he believes he can grow 300 bushels of corn per acre if he can keep it from

being blown over or falling down. The boy who wins in 1915 will have to do his best.—J. F. HUDSON.

You cannot claim that this boy had unusual opportunities, for he was ten and a half miles from the nearest railway. Instead of lamenting his unfortunate circumstances as some boys might have done, he just roused up and made the dirt fly. I hardly need tell you that thousands of other boys from Florida to Maine, and, so far as I know, clear on to California, are doing things along the same line; and may God be praised it is not the boys alone. Our young girls (God bless *them*) are helping the world in the same line.

Here is another clipping, from our Bradentown daily:

MISSISSIPPI GIRL AND BOY MAKE CROP RECORD.

WASHINGTON, March 23.—The best records in the southern corn and tomato clubs for the last year were made by a Mississippi boy, Carl Graves, of Soso, and an Alabama girl, Hester Sartain, of Walker.

Carl raised 202 bushels of corn to the acre at a net cost per bushel of 14½ cents. Hester raised 7037 pounds of tomatoes on one-tenth of an acre, put up 1620 pounds, and made a net profit of $146.20.

In regard to socialism, it will get along just as fast (or perhaps faster) if we all keep busy and "let up" just a little on finding fault because this great wide world is not in its present stage *altogether* perfect.

Let me touch on the question of wages in closing. There is much complaint, especially from the socialist, that laborers are not paid enough; in fact, there are quite a few extremists who insist that all employees should be paid all they earn—that is, the men who employ workmen should not have any *profit* at all. Suppose you tell a farmer, for instance, that it is not fair nor honest for him to make a profit by employing labor. If I understand it rightly they claim the hired man should have *all* the profit. The owner of the farm should have just enough to feed and clothe himself and no more. When it comes to buying new machinery needed on the farm, I presume the farmer would be allowed enough to purchase the necessary tools. I do not know what they would say in regard to the automobile. Well, a good friend out in California (I do not mean to use any sarcasm by calling him a good friend) recently wrote me that I ought to be sent over to Europe and placed before the biggest cannon, because I owned up that, years ago, I hired juveniles to do easy work, in connection with the bee business, at *three cents an hour*. Let me say here what I did not say before, that those juveniles came around after school and were greatly delighted to think they could earn a little money by something that was just fun for them; and I happen to know that some of their poor mothers were also greatly delighted to know that their children were employed in something useful, even though they got only three cents an hour. Of course they stopped at any time when they got tired; but they were so delighted with their work that they felt hurt when I told them they had worked long enough. Just now three cents an hour *does* seem small pay; but, my good friend, when I was a schoolboy I rode horse to cultivate corn all day Saturday for 25 cents, which was only 2½ cents an hour, and I was as much delighted with my "two-shilling piece" when night came as you can well imagine. I did not find riding a horse to be drudgery, for the man who employed me was a good kind friend, and I might, perhaps, confess to you that at that time my good father and mother were finding it uphill work to feed and clothe a family of seven children, and the 2½ cents an hour I earned seemed like a Godsend. Now, I leave it to the readers of GLEANINGS to decide whether it in any way hindered my progress because I did thus early in life help to support the family by working all day for 25 cents. As for myself, I can now fervently thank God that conditions were such in my childhood that I had to work thus, even at small pay. Had not my parents been comparatively poor people, I fear I never should have learned to love gardening and chickens all through my life, and clear up into old age. God bless the boys and girls who are at present finding pleasant and profitable occupations in the "corn clubs" and "tomato clubs" referred to in the clippings above.

Even though this article has spun out much longer than I intended, I find I have given little or no advice to the boy who is "crazy" to learn a trade. I presume that during my busy life I have learned to be at least tolerably expert in a dozen different trades or occupations. My first trade, perhaps, was gardening, and my good mother taught me that trade. As soon as I was old enough I commenced visiting expert gardeners or truckers; and later I kept in touch with our Ohio Experiment Station. My father was a carpenter, and he taught me how to care for and use carpenter tools. I never had any other training, except, perhaps, from a brother-in-law who was and is an expert house-builder, although he is now 85 years of age. Of course he does not do very much now at carpentry. For many years I was considered an expert in the line of watch-repairing. I first paid a jeweler

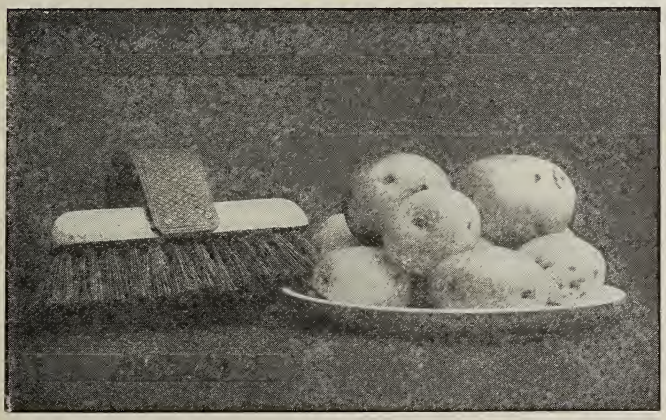
$25 for two weeks' instruction. After that I worked perhaps a year under instruction, with, say, enough to support myself. Then I started out for myself, as I have told you in former Home papers. There were two fairly good shops in our town when I started; but in three or four years the other two had gone somewhere else. You may be sure I worked early and late. I rarely disappointed a customer. When my health failed from being too much indoors I went back to the gardening of my childhood, and to chickens, and, later on, bees. My ambition was to get clear up to the head of the class as fast as possible, no matter *what* I undertook. There are now countless periodicals devoted to every trade and occupation; and through all my life I have availed myself of these helps. With the experience you have had in carpentry with your neighbor as mentioned, I see no reason why you cannot speedily become a good carpenter without any special help from anybody. May God give you faith and skill and energy while you read over once more the two texts I have placed at the head of this article.

HIGH-PRESSURE GARDENING

OUR FLORIDA GARDEN TOWARD THE LAST OF APRIL.

Before we go back to our Ohio home I want to take the good friends who read GLEANINGS through our garden as we take visitors almost every day. I say *we,* because when there are women callers Mrs. Root usually goes along also.

I have told you about the mulberries so much I need not repeat it; but this year we have a *strawberry-bed* also; and when Mrs. Root makes a pie or shortcake now, she adds strawberries, more or less, to the mulberries; and in this way we think both are improved. Right in front of the mulberries there are six rose-bushes that cost only 15 or 20 cts. each at Reasoner Brothers' nursery; and although they haven't been out over six or eight weeks we have now a great profusion of roses that would compare with those in the city florists' show-windows. Every morning for weeks past we have had roses galore to give neighbors and visitors; and finer roses I do believe than I ever saw before. The collards I have spoken of are now immense, and we are pulling off the lower leaves for the chickens every few days, and it only seems to make them grow better. I spoke of some transplanted onions where I used guano. Well, one row 40 feet long gave 100 onions averaging over ½ lb. each. We put three in a bunch, and they went off quick at a nickel. You can figure up how much an acre would bring at this figure. If we could wait to have them mature they might bring even more money. Some of them now weigh close to 1 lb. We are still getting $2.00 per bushel for our Red Triumph potatoes. The yield in our garden is about 1 1-3 bushels per square rod, which would be something over 200 bushels per acre. A socialist friend who seems to object because I advise "the great army of unemployed" to "get busy" growing potatoes in the back yard declares potatoes do not bring $2.00 per bushel down here in Florida. Perhaps he hasn't seen such potatoes as we grow, say like these above.



The potatoes that grew in six weeks and the brush that brushed the skins off, instead of paring or scraping. They are the Red Triumph, and one potato is shown only partly "peeled."

Mr. Burnett, of the firm of Alderman & Burnett, grocers, said in March, "Mr. Root, it is a pity you cannot bring us *50 bushels of such potatoes, instead of only about one* bushel per day." The Cleveland *Plain Dealer* for April 17 quotes "Florida Hast-

ing potatoes, $7.50 per barrel." My melons and squashes during the past winter were mostly a failure, owing to the unusual amount of cold and wet weather; but cabbages seem just suited with the conditions. We are growing them mostly for our chickens.

Helianti is growing tremendously since the warm weather. The tubers I brought from Ohio and planted in November have just started; but half a dozen tubers from the Burgess Seed Co., Allegan, Mich., planted in March, came up at once, and are now a yard high. We hope they will give a bigger crop here than they did in Medina.

Later.—To-day is May 3, and I am here at my Medina home; and it occurs to me that I wish to say something more about the Red Triumph potatoes that I have grown with so much enjoyment down in our Florida home. To get $2 a bushel for the potatoes, of course we have to sort the small or inferior ones. After the sorting they are put on a screen made of one-inch poultry-netting. Those that went through the screen were boiled for the poultry. While they were boiling hot they were taken in a common pail, with the water they were boiled in, to the poultry-yard. With a common fire-shovel they were mashed and chopped up with enough middlings to make a nice dry mash; and the fowls become so fond of them that as soon as they saw me coming with the pail they would run to meet me. Small potatoes, or any potatoes not wanted otherwise, are certainly very profitable for poultry. While feeding our small potatoes we got our best laying of eggs.

Now, I have something more to tell you about small potatoes. Those that did not go through the screen, and were too small to be saved for seed, are used as follows: I made a little basket of wire cloth to hold the potatoes while they were being baked in the oven. The basket kept them from rolling about, and made it easy to get them in and out of the oven. Then they were baked until, when squeezed, they would pop open like an egg. Of course the outside was somewhat charred; but you know charcoal is advertised as a valuable medicine; and I suppose you know, also, that Terry, Wiley, and others have been telling us that not only should wheat be eaten whole as God made it, but that the peeling of the potato contains valuable salts necessary for good health that we cannot well get otherwise. Now, when the roasted potatoes are smoking hot I crush them and drop them into a bowl such as we commonly use for oysters. When the bowl is full, or nearly so, I sprinkle on some salt and pour on some milk. It seems to me I shall never tire of these roasted potatoes. They agree with my digestion better than anything else; and I feel sure they are a very good substitute for meat, with milk taken with them. Who is there among you who has not had fun in roasting little potatoes outdoors in the fire when you were kids? Perhaps old potatoes would not seem just as luscious; but when you come to eating new potatoes again, just try what I have recommended in the above. It is another short cut "from producer to consumer."*

For the first time during the past winter we have had a strawberry-bed of our own; and those raised beds I have told you about, in the Florida soil, seem to be just the thing for strawberries. We have had strawberries for two or three months—all we could use, grown in our own garden.

Our feterita plants, when we left, had made such a growth during the recent warm weather in Florida that I could stretch some of the leaves up almost as high as my head. One single grain produced from six to twelve stalks; and the plants for green stuff alone, for all domestic animals, including chickens, is worth more than almost any other plant I know of. A plant grown considerably in Florida called "chicken corn" very much resembles it, but the grains are smaller. Another plant called Egyptian wheat (or shallu), although it was only a foot high when I left, so far very much resembles feterita. All three belong to the non-saccharine sorghums.

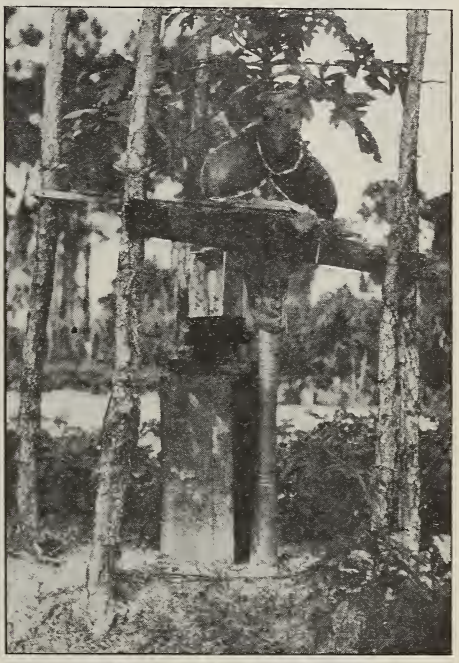
THE SPINELESS CACTUS.

Last fall (p. 828, Oct. 15) I had quite a little to say about spineless cactus. Some time in December I got half a dozen "slabs" of the Reasoner Brothers. I planted the slabs according to directions, and watched them all winter, anxious to see a bud starting; but we had so much cold wet weather that I did not see any start until about April 1. From that time on they made a most amazing growth. When I left there, one plant had five leaves, each one fully as large as my hand. The growth was so rapid that I could see a difference each morning, and another difference in size when night time came. My good friend Henry Borcher, of Laredo, Texas, also sent me half a dozen slabs of the wild spineless cactus that grows in Mexico. These, although planted later than the others, took a start during the

* Since the above was put in type I find the following from our good friend T. B. Terry, in the *Practical Farmer:* "One of the best authorities in the world tells us that a pound of baked potato is equivalent in total nutritive value to one pound of chicken, or eight eggs, or seven ounces of bread, etc."

middle of April, and were making new leaves or slabs about as rapidly as the others. The Burbank Company claim that the fruit-bearing cactus is a different variety from that which bears just slabs for feeding domestic animals. But the Government bulletin in regard to the spineless cactus seems to insist that they are *all* fruit-bearing, more or less; and now a nurseryman in the northern part of Florida says he has *ten* different kinds, some partly fruit-bearing and some not. The prices are from 60 cents *a leaf* up to $5 a leaf. Nobody sells cactus *plants*. They sell only the leaves, which they call "slabs." Well, as it seems to devolve on *me* to test these wonderful novelties (?) I sent for a 60-cent slab, and also for one of the fruit-bearing slabs, which cost $1.75. Now, I did not pay $1.75 for a *plant,* mind you. I paid the money for only a single leaf, and not a very large leaf at that. Why should anybody pay $5 for just one *leaf* from a plant, do you ask? Well, this plant (so he says) bears fruit as large as oranges, and more delicious; and the vender of this spineless cactus tells a story about a doctor in Jacksonville who purchased one slab, and in just ten months it had produced *47 slabs* like the original. The Jacksonville *Times-Union* gives a picture of the plant with its 47 slabs or leaves. Judging from the rapidity with which spineless cactus grows in my Florida garden I can readily believe the thing is possible. Years ago while wandering in a thicket in Osprey—the island where I had my bees—I found a single cactus plant that gave me a little pailful of very nice fruit. I have not seen any of the large fruit; but my friend Borcher, whom I have mentioned, when sending me the cactus slabs sent me also some cakes of a confection made from the juice of the cactus fruit; and at my request he investigated in regard to this confection, and he says it is made from the juice alone of the cactus fruit without any sugar whatever being added. It makes a very nice substitute for a chocolate candy. When you come around to visit me and to go through my Florida garden I will give you a taste of the cactus confection, even if I should not have some *fruit* to treat my friends and visitors.

Speaking about fruit, let me refer again to that tree I have mentioned, the papaya. It gave us five beautiful fruits during the past winter. The largest was 22 inches round and 18 inches long. It looked like a huge watermelon before it turned yellow. It was big enough so that we had all we could use ourselves for several days, besides giving some to the neighbors and the visitors who happened along about that time. Reference to this tree will be found on page 298, April 1. We saved the seed from this "big melon;" and if you will mention it when writing us I will send you a few to test. Of course the tree will not stand frost. I have grown them here in Ohio by starting the seeds in the greenhouse, almost as high as my head, but they did not bear any fruit.



PAPAYA CARRISSA, THE TREE THAT BEARS "MUSKMELONS."

One of our visitors, a beekeeper, had a small kodak with him; and although it was a windy day he succeeded in getting the picture above. The boxes standing near the trunk were to support the largest fruit. To prevent abrasion when the wind blew I placed a folded cloth on the scaffolding to support the fruit. See description, page 298, April 1.

Speaking of seeds reminds me that I owe some of you an apology. You will remember what I have said about the Burbank Rainbow corn. We took some of the corn down to Florida and planted a row. To my surprise only about half of the stalks in the row showed the rainbow colors and variegation. Then I remembered that our row of Rainbow corn here in Ohio was but a little way off from our other sweet corn, and the bees had produced cross-fertilization; so the seeds we have been sending to

our friends may not all show the beautiful stripes of so many colors. As we have quite a little left of our own growing, and some more from the good lady in California who sent us several ears by mail, I think I can give all applicants from this time on five grains each instead of three, as mentioned last fall.

Below I give the letter from the kind lady who sent us the Rainbow corn:

Mr. Root:—I am sending you by this mail two ears of Rainbow (Burbank's) corn that I raised here this year—one yellow and one red ear. I was the only one here who had it (by the way, I got it from John Lewis Childs) in these parts, and all who saw it thought it beautiful. It was over five feet tall, and some had red silk that was lovely. That is the kind that had the red ears; but the seeds I planted were all yellow. I hope this will reach you safely, and that it will grow as well for you as it did for us; and I thank you for telling us how good it is to eat. I hope to try it myself next year. You see the corn-worms had sampled it. They get in all the corn here.

Sunland, Cal., Dec. 25. MRS. P. BAILEY.

HEALTH NOTES

THE DANA FOOD-CHOPPER, AND A SAMPLE OF THE WAY SOME PEOPLE DO BUSINESS.

Mr. Root:—Some time ago in your department you gave a notice concerning a machine called the Dana food-chopper. I sent to Williams & Co., as directed, and received one by express from them. When I opened it the part used for grinding small grains, etc., was broken. The Williams Co. stated that the chopper they sent me was the only or last one they had in stock. They promised to send the chopper for $1.25 prepaid. Instead they sent it collect. The express was 60 cents. Since Williams & Co. said the chopper sent me was the last in stock I wrote direct to the Dana Mfg. Co., Cincinnati, to have the broken part replaced. I enclose herewith the answer I received. It appears that for several years this food-chopper has not even been manufactured, and that no parts are available. I was rather disappointed. Now, I haven't written this to complain, but only to show you exactly how the matter went with me. Now, Mr. Root, I'll tell you what we want. We should much like some little tool that we could use to grind grains with for our own use, such as breakfast foods, etc. If you know of any such tool, please give us the name and address of the firm handling it, or the name of the manufacturers. ISAAC D. KREISS.

Escondido, Cal., April 27.

Below is the letter referred to:

Isaac D. Kreiss:—Your favor of the 6th, addressed to The Dana Mfg. Co., and calling for parts for Dana food-chopper, has been forwarded to us inasmuch as we have purchased their entire business. As the manufacture of the Dana food-chopper was discontinued some years ago, and none of the parts are now obtainable, we regret our inability to assist you in the matter.

THE PEERLESS FREEZER COMPANY.

Winchendon, Mass., April 21.

We give the above in order that none of the friends may have a similar experience. We have one of the little food-choppers, and it does the work nicely, and runs easily; but Mrs. Root has just complained that there is one part of the machine that is quite difficult to clean after grinding certain kinds of food. Sears, Roebuck & Co., Chicago, advertise an implement made in several different sizes. The smallest size is only 65 cents; and whatever *they* sell can be returned at their expense if it does not give satisfaction.

Now, here is some good news—at least it seems so to me—for the good brother who writes us, and everybody else, for that matter. The new cereal, feterita, does not need any grinding—in fact, we like it better without grinding. You can grow it in your garden anywhere—yes, even if you have a long severe drouth. When the grains are sufficiently mature you can pound out the grain with very little trouble (for I have recently done that very thing), and cook it without any grinding; and I think you will agree with Mrs. Root, myself, and all the neighbors, that it is ahead of any other cereal, especially if eaten with a little butter and good honey, with a bowl of milk near by. If anybody else has been disappointed in the Dana food-chopper, and will let me know, I will try to make it good.

GOD'S KINGDOM COMING.

We clip the following from that up-to-date periodical the *Union Signal:*

BEER-DRINKING CAUSES ACCIDENTS.

The Western Electric Plant of Chicago forbids its workingmen bringing beer upon the grounds. Why?

Because it was noticed that a large number of accidents occurred uniformly after lunch, and in almost every case the victim of the accident had taken beer with his lunch.

TOTAL ABSTINENCE DEMANDED; EIGHTY-EIGHT PER CENT OF THE MANUFACTURERS OF THE UNITED STATES DEMAND TOTAL ABSTINENCE OF THEIR WORKMEN.

Sickness is always more fatal with beer-drinkers, and accidents are usually fatal to them.

About one million railroad men in this country have to be total abstainers from beer and all other intoxicating liquors.

SALOONS IN ARIZONA; THEIR LAST DAY.

To-day is the last day for the saloons, and oh how glad I am! GLEANINGS can well claim its share of the credits for helping to make Arizona dry. Without woman suffrage we could never have accomplished so much good. Mrs. Riggs and I are feeling so good about our statewide prohibition that we are trying to feed more hungry tramps than anybody else in town; but everybody in Bowie is feeding them, I am glad to say. It certainly is a blessing to be in this world to do all the good we can. T. J. RIGGS.

Bowie, Ariz., Dec. 31.